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UNIVERSITY OF ALBERTA

Title: Reading comprehension, Stress and Motivation in First Year University Students Studying in French.

By

Jeannine de Moissac

(C)

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF EDUCATION

IN

COUNSELING PSYCHOLOGY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

SPRING, 1990

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled READING COMPREHENSION, STRESS, AND MOTIVATION IN FIRST YEAR UNIVERSITY STUDENTS STUDYING IN FRENCH submitted by Jeannine de Moissac in partial fulfilment of the requirements for the degree of Master of Education.

Dr. Stephen Carey
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Date. March 2, 1990.

Dedication

To my mother and father - whose patient support and encouragement have left so many options open for me.

ABSTRACT

The purpose of this research was to investigate the relationship between reading comprehension, stress and motivation among three different language groups of university students studying in French at Faculte Saint-Jean, University of Alberta. The three groups were 1) Anglophones, 2) Francophones (outside Quebec) and 3) Quebecois. The sample is limited to forty-three students from a first year Psychology class.

Reading comprehension scores and time taken to read in French and English as well as State and Trait Anxiety scores were analyzed quantitatively. Students' motivation and experience of stress were examined through qualitative descriptive analysis.

The most significant finding in the quantitative analysis of this study was that students took longer to read equivalent texts and scored lower on reading comprehension in their non-dominant language be it English or French. There were significant differences found on English reading comprehension scores and on French Reading time among the groups. There are high correlations between the students' dominant and non-dominant reading scores and time taken to read two equivalent psychology texts. In the qualitative analysis it was found that time and effort taken to read in a non-dominant language are stated as major stressors for all three groups.

The purpose of the study was to foster a greater awareness of differences due to the language background of students when they are studying in their non-dominant language. Students with different language backgrounds appear to have different needs. It is important that educators and counselors be cognizant of these differences.

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TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1.
	Purpose of the study	2.
	Questions	3.
	Method & procedure	4.
	Quantitative Analysis: the Null Hypotheses	7.
	Qualitative Analysis	8.
	Glossary	8.
	Conclusion	12.
II.	REVIEW OF THE LITERATURE	13.
	Discussion of bilingualism	14.
	Reading comprehension	19.
	Reading time	23.
	Stress/anxiety	25.
	Motivation	29.
	Summary	32.
III.	METHOD AND PROCEDURES	34.
	Rationale for Methodology	34.
	Setting	35.
	Sample	36.
	Research Instruments and Sources of Data	44.
	Qualitative Data Collection Procedures	50.
	Data Analysis	53.
	Limitations	53.

IV. QUANTITATIVE RESULTS..... 55.
Reading comprehension scores..... 55.
Reading comprehension time..... 59.
Anxiety scores STAI ..... 62.
Summary Table of results..... 63.

V. QUALITATIVE RESULTS..... 64.
Anglophone subjects..... 65.
Francophone subjects..... 73.
The Quebec subjects..... 82.
Summary Table of conclusions..... 89.

VI. DISCUSSION ..... 90.
Research question #1 ..... 90.
Research question #2 ..... 93.
Research question #3 ..... 95.
Research question #4 ..... 96.
Research question #5 ..... 97.
Recommendations ..... 98.

References .....107.

LIST OF TABLES

Table 1 Language dominance self-perception and STAI choice ..... 37.

Table 2a Reading Scores and Language dominance self-perception..... 42.

Table 2b Reading Times and Reading Scores... 43.

Table 3 Arrangement of Computer texts ..... 46.

Table 4 French Reading scores..... 56.

Table 5 English Reading scores..... 57.

Table 6 T-Test on Within-subject analysis.. 58.

Table 7 Reading time in French ..... 59.

Table 8 Reading time in English ..... 60.

Table 9 T-test on within-subject analysis.. 61.

Table 10 State anxiety ..... 62.

Table 11 Trait anxiety ..... 63.

APPENDIX 1. Statistics Canada ..... 120.

APPENDIX 2. French educational background of students..... 121.

APPENDIX 3. Spielberger's Anxiety Inventory (STAI)..... 122.

APPENDIX 4. Reading Texts:Hunger and Dreams La Faim et les Reves.126.

APPENDIX 5. Reading comprehension tests.... 143.

APPENDIX 6. Questionnaire: Demographics.... 155.

APPENDIX 7. Consent Forms..... 156.

Chapter 1

INTRODUCTION

Canada's bilingual and multicultural status necessitates the evaluation of the consequences of bilingual education. Advantages as well as disadvantages have been attributed to bilingual education. In Canada, French Immersion programs and Heritage Language schools have opened possibilities for language enrichment and employment opportunities for students with a variety of language backgrounds. Research has shown the importance of the socio-cultural and cognitive dimensions in the process of language development for first as well as second language acquisition. However factors such as the valuation of language within the child's environment, and native ability influence the process of first and second language development are not well understood.

In today's high technology and information processing world where academic achievement is highly desirable or almost a necessity, reading comprehension is an essential language skill. Because the bilingual process is not a uniform phenomenon, researchers,

educators and school counsellors attempt to 1) find methods of measuring reading comprehension in the first and second languages of students 2) understand the socio-cultural factors affecting bilinguals and 3) be sensitive to the specific stressors inherent in bilingual education.

In bilingual research a specific terminology has evolved. A glossary of terms such as first language, second language, dominant language, subtractivity, additivity is included at the end of this chapter as added clarification on the specific meaning of the concepts used within the context of this research.

Purpose of the study

This study is directed at evaluating the relationship between reading comprehension and reading time in both first and second languages as well as the stress component and motivation of university students studying in a second language. This research attempts to analyze these variables by within-subject and between-group comparisons in the context of a first-year university psychology class. A similar study with a "sheltered" psychology class and a comparison group at the university of Ottawa was

conducted by Edwards, Wesche, Krashen, Clement, & Kruidenier, (1984) with the purpose of evaluating second language acquisition through second language subject-matter reading. An anxiety scale was used to measure the "affective filter" deemed important in this process (Krashen, Dulay, Burt 1982). Their results "indicate clearly that the sheltered class groups experienced an increase in self-confidence with the second-language.." (p.279, Edward et al 1984) However the study by Edward et al (1984) did not compare the time taken to read in English and French.

To complement the quantitative approach in the present study, additional qualitative research was conducted on students' motivations and experience of stress when reading in their first and second language. It was hoped that the analysis of quantitative and qualitative data would shed new light on the relationships between reading comprehension, reading time, stress, and motivation of bilingual university students.

Questions

The questions under study were:

1) When students read a psychology text in their non-dominant language (either French or English) at a

University level what are the differences in comprehension between the concepts understood as well as in their dominant and non-dominant languages?

2) What is the reading time in their non-dominant language relative to reading time in their dominant language?

3) Are there differences in anxiety when reading in a dominant language versus reading in a non-dominant language ?

4) When reading in a non-dominant language what are the stressors? and

5) What are the motivations towards reading in a second-language of first year university students whether they be Anglophones, Francophones (outside Quebec), or Quebecois?

Method and procedure

1. Sample

This present study was conducted with first year university students attending a Psychology class at Faculte Saint-Jean. These students come from a variety of backgrounds; some are Anglophones who have followed French-immersion programs or core-French programs, others are Francophones from minority language backgrounds while still others are from a primarily unilingual French majority background e.g.

Quebecois. Although the linguistic and cultural diversity of this population presents a major challenge to conducting research it is possible to classify these students as belonging to three identifiable socio-linguistic groups that have different language dominance backgrounds originating from their family and schooling experience. The labels used are: Anglophones, Francophones and Quebecois.(see Glossary p.9)

2. Delimitation due to the sample

Accordingly this study addresses motivation and stress experienced by first year university bilingual students whose English and French language competence varies as measured by their reading comprehension and time taken to read an introductory psychology text in their first and second languages.

3. Procedure

Drawing on Carey's 1987 study, a similar reading comprehension test in both English and French was administered to forty-three first year university students studying in French. Because reading in a second language may be more demanding than reading in a first language, an anxiety inventory (Spielberger's State Trait Inventory,1983) was also selected for the

present study to investigate the differences, if any, between the three identified socio-linguistic groups.

To further investigate what factors might influence studying in a second language, a sample of five students from each socio-linguistic group was selected for interviews. The quantitative/qualitative methodology approach in this study was intended to triangulate the data so as to increase reliability by measuring reading comprehension and reading time and by analyzing the subjective world of the subjects under study.

4. Variables

The variables are:

a) Reading comprehension scores obtained from English and French tests of comparable selections from an introductory psychology text.

b) Time (minutes and seconds) taken to read both the English and French selections.

c) Scores from a state and trait anxiety inventory.

d) Motivation and stressors as derived from students' interviews.

Quantitative Analyses: The Null Hypotheses

The present study is structured to test the following null hypotheses.

1. Reading Comprehension Scores

1.1 There will be no difference among the three socio-linguistic groups in French reading comprehension scores.

1.2 There will be no difference among the three socio-linguistic groups in English reading comprehension scores.

1.3 There will be no within-subjects difference between the dominant language and the non-dominant language in reading comprehension scores.

2. Reading Time

2.1 There will be no difference among the three socio-linguistic groups in French reading times.

2.2 There will be no difference among the three socio-linguistic groups in English reading times.

2.3 There will be no within-subjects difference between the dominant language and the non-dominant language in reading times.

3. Anxiety Standard Scores (STAI)

3.1 There will be no difference among the three socio-linguistic groups in state anxiety.

3.2 There will be no difference among the three socio-linguistic groups in trait anxiety.

Qualitative Analyses

From the students' interview data the general questions focused on their motivations and on their experience of stress when reading in their dominant and non-dominant languages.

Glossary

* The socio-linguistic grouping was established by the students self-rating and reflect a non-homogeneous reality . (table 1)

Anglophones: students who perceive themselves as having English as a first and dominant language.

Francophones: students from Alberta and Ontario who perceive themselves as belonging to the French cultural group, outside Quebec. These students vary on ethnolinguistic vitality. (Carey,1989)

Quebecois: students who are from Quebec and are dominant in the French language.

Additive/subtractive bilinguality: a theoretical construct first explained in detail by W. Lambert at Faculte Saint-Jean, University of Alberta (1974) to make a distinction between second language learners. Additive is used when the second language is added onto a well-developed first language,

while subtractive describes the situation of minority language learners where a second language is introduced before a first language is fully developed. This theoretical construct is defined in bilingual research with a cognitive-development consequence:

Additive: " a situation in which a child derives maximum benefit from the bilingual experience for his cognitive development; this is usually the case where the two languages are highly valued in the child's environment." (Hamers & Blanc, 1989)

Subtractive: " a situation in which the bilingual child's cognitive development is delayed in comparison with his monolingual counterpart; this usually occurs when the mother tongue is devalued in the environment." (Hamers & Blanc, 1989)

Balanced bilinguality: "a (theoretical) state of bilinguality in which an equivalent competence is reached in both languages, whatever the level of competence; note that balance is not equally distributed for all domains and functions of language." (Hamers & Blanc, 1989)

Dominant Bilinguality: a state of bilinguality in which competence in one language is superior to competence in the other; note that dominance is not

equally distributed for all domains and functions of language." (Hamers & Blanc, 1989)

Dominant/Non-dominant language: levels of competence in one language relative to another language (English and French) derived from reading comprehension scores and reading time measures in this present study. The students' self-perception on language dominance is compared to their scores and time in the present study.

First language, native language, mother tongue or L1: the linguistic code(s) corresponding to an individual's first language experience;" (Hamers & Blanc)

Second language or L2: "the language learned by an individual after acquiring his first or native language." (Hamers & Blanc)

Motivation: as defined by Gardner and Smythe (1974) it is defined in terms of goals, orientation and as amount of effort, motivational intensity. Instrumental motivation pertains to learning a language for an utilitarian goal with no obvious intention to interact socially while integrative motivation pertains to valuing language for interaction and communication purposes with members of that language group.

Reading comprehension: ability to extract pertinent information from a text as measured by an objective test.

Reading time (minutes and seconds): time taken to read a text whether in English or in French.

Anxiety: Usually defined as "a complex state that includes cognitive, emotional, behavioral, and bodily reactions." (Sarason,1984) In the present study this term is used in the context of anxiety described as "affective filter" by Dulay, Burt & Krashen (1982).

Trait anxiety: Spielberger's (1983) measure for "relatively stable individual differences in anxiety proneness". (p.1)

State anxiety: Spielberger's (1983) measure for "palpable reaction or process taking place at a given time and level of intensity." (p.1)

Stress: the nonspecific response of the body to any demand made upon it. (Selye,1976)

Stressors: demands from external stimuli perceived and experienced as stressful. Examples: being tested in ones' non-dominant language, unknown vocabulary in a text.

Conclusion

In relation to the organization of the text to follow, chapter two is a review of the literature that is pertinent to the hypotheses being tested. Chapter three is a discussion of the methods and procedures that have been undertaken in the present study. Chapter four contains a statistical analysis of the results of the study followed by a qualitative analysis of the fifteen cases in chapter five. Chapter six is a discussion of the results with suggestions for educators and counsellors. References and appendices follow the main body of the text.

Chapter 2

REVIEW OF THE LITERATURE

The author's review of the psychological research on bilingualism that underlies the present study has brought into focus four important components which influence academic achievement:1) the reading process in a second language which is complex and further complicated by the 2) socio-cultural bilingual context of the population under study and how the factors of 3) stress, and 4) motivation impact and interact with each other.

This literature review is organized into five sections. The first is a discussion of bilingualism and its socio-cultural context. The second and third sections are a discussion of reading comprehension and reading time of bilinguals in their first and second language. The fourth is a discussion of stress/anxiety as related to reading comprehension in first and second languages. This chapter is concluded by a discussion of motivation in second language learning.

Discussion of Bilingualism

Bilingual research branches out in two directions: 1) studies focused on minority students who necessarily found themselves in the position of learning a second language and 2) studies focused on second language learners by choice, i.e.immersion programs. In both cases researchers have looked at language facility in terms of its importance to comprehension, communication and achievement, and how and when this ability to express ideas and feelings can be labeled as deficient. (Ben-Zeev & Anderson 1984, Cummins, 1987). Additionally, considerable expenditures of funds have been allocated to research minority group efforts to maximize their educational process, i.e. literacy, via their first language and/or immersion in a second language (Rosier,1978;National Indian Brotherhood,1984). On the other hand Gage & Berliner (1984), Epstein (1977) and Goodman (1979) cite research evidence showing that some bilingual children gain higher academic achievement levels. Cummins (1974) summarizes research evidence for linguistic effects of bilingualism on cognition: higher verbal intelligence, and higher level of pscholinguistic abilities. This suggests the value of bilingual education. According

to these authors, bilingualism may benefit both minority and majority students.

Furthermore the acquisition of more than one language is presented as possibly additive or subtractive (Lambert,1974) and this necessitates research on the differences in the conditions of second language learning. Bilingual research conducted where socio-cultural conditions produce additive bilinguality (Lambert,1974; Bain,1974; Lapkin,1984) has indicated the positive influence of bilingualism on the cognitive development of individuals while research done with some immigrant and minority groups, where socio-cultural conditions produce subtractive bilinguality (Lambert,1974; Ben-Zeev,1977; Cummins,1987) has shown the deficits and the disadvantages inherent in the lack of proficiency in two languages. Landry (1987) and Cummins (1987) have addressed the socio-cultural factors that can influence the process of becoming bilingual (proficiency in two languages) which affects the degree of competency in reading comprehension whether it be in English or French.

As reported by Statistics Canada (Appendix I; Carey,1987), Francophones and other bilingual minorities do not attain the same level of education as

do English speaking students. A major factor in successful mastery of a second language is a high level of first language mastery.(Carey & Cummins, 1983). Carey (1987) concludes that "it is important to appreciate the frustration of people in minority linguistic situations where language competence is the principle marker and yet is difficult to value and maintain."(p.107) Minority Francophones need to expend greater effort to maintain a first language, one of the factors underlying the success of Anglophones mastering French. Non-mastery of French leads to difficulty in mastering English and accessing higher levels of education.

The additive and subtractive continuum described as the socio-cultural and cognitive dimensions of bilingualism by Hamers and Blanc (1989) explains the interaction between environmental conditions and cognitive functioning in the production of efficient linguistic codes. The conditions which produce additive bilingualism on the high end of the continuum are prior complete learning of a first language, high valuation of both languages in combination with high cognitive functioning. Landry

and Allard describe the necessary conditions for a positive impact of bilingualism:

> a) a high level of proficiency in both communicative and cognitive-academic aspects of L1 and L2; b) maintenance of a strong ethnolinguistic identity and positive beliefs toward one's own language and culture while holding positive attitudes toward the second language; and c) the opportunity to use one's first language without diglossia, that is without one's language being used exclusively for less valued social roles or domains of activity. (Landry & Allard,1987,p.109 in Carey, 1987).

The minority situation in the context of language acquisition is a complex phenomenon (Fillmore, 1986) in the United States as well as in Canada (Cummins,1987; Cohen & Swain,1976). Variables, such as lower socio-economic realities, family communication styles, valuation of education, enrichment opportunities, native language erosion with social isolation from second language stimulation, can contribute to linguistic and cognitive deficits.

A study conducted with Francophones in the same setting as the present study which considered "pre-vocal thought formulation" revealed that this group of bilingual subjects report that they think in both languages rather than in the mother tongue, may be due to English influences throughout their life. (Carey,1974;Durand,1977) The results obtained showed

that Francophones remembered more words in the "both languages list" than in the "only French list" and "only English list". The study shows "bilinguality" with no apparent language dominance in either English or French. This concurs with Crawford's (1986) findings that language encoding is dependent on learning and performance conditions.

However, Baetens Beardsmore (1982) has considered that the reality of balanced bilingualism is very rare. This seems to concur with the results of a study done in Alberta (Carey,1989). The pattern of language assimilation for Francophones living in Alberta was found to be much the same as other minority groups of comparable concentrations in spite of the official language status of French. Balanced bilingualism is unlikely because it is impossible to find environmental situations where French is used as a means of communication in every day living in the same way that English is. Before the third generation most Francophone families have become anglicized.

In this present study for all students from any of the three groups under study there is variability on socio-cultural and cognitive conditions. The Francophones experience an early bilingual

environment of mixed language models which could lead to subtractive bilingualism. (Landry,1987) Thus for Francophones the ethnolinguistic vitality of French is lower than that for either Quebecois French or Anglophone English. The Anglophones and the Quebecois have in common the experience of a later bilingual environment if they so choose to learn a second language through schooling. The Francophone families in a minority setting are immersed in an English environment where French is not necessarily maintained through schooling.

Reading Comprehension

Reading comprehension refers to the retrieval and reconstruction of meaning of a text by a pscholinguistic process that combines the use of reasoning with decontextualized language cues. (Hamers & Blanc, 1989; Robbinett, 1974) A prerequisite for comprehension of a written text, it would appear, requires a fairly high level of knowledge of the language in which the text is written.(Fillmore, 1986)

Research in the measurement of reading comprehension in bilinguals is not conclusive. As Beardsmore (1982) indicates one of the two languages is usually dominant. Reading comprehension testing which

measures syntactic automaticity, retrieval of units of meaning, is one way of assessing language skills. Availability of vocabulary and general cultural knowledge are important elements conducive to reading comprehension. A reading comprehension score reveals, to a degree, reading literacy in a specific language.

In Canada with the implementation of French immersion programs, the evaluation of reading comprehension with bilingual samples began so as to assure that French comprehension would not be gained at the expense of English comprehension. There is controversy, as a result of mixed findings, as to whether reading skills are transferable from first to second language and at what cost to the first language.

MacNamara (1966) found that skills in both French and English languages were delayed when reading was introduced in the second language prior to mastery of oral proficiency; however, Jones' study (Bilingualism in Welsh education,1966) indicates that only first language skills were delayed when reading was begun in the second language. Moreover, Modiano (1968) found that second language reading ability improved when reading instruction was begun in the first language. However, Swain (1974) comparing early

and late immersion programs, states that total French immersion children who had studied English for one year could read as well in English as children of the same age who were in partial French immersion programs and who therefore had more schooling in English. Tucker (1975) in "The development of reading skills within a bilingual education program", also found French reading skills in grades one and two to be good predictors of reading ability in English. Thus, it would appear that there is a substantial transfer of reading skills between languages (Genesee, 1979). The results of reading comprehension assessments for bilingual students have shown that the acquisition of reading skills and strategies are largely independent of specific language. (Whittle, 1986;Carey,1987). Carey's (1987) research conducted with Anglophones and Francophones educated in a common French immersion program reveals that "Anglophones in this setting were statistically superior to Francophones at English language comprehension and comparable in French reading comprehension." (p.107) Some minority Francophones can lack one of the important factors for linguistic competence, mastery in a first language. The finding supports the hypothesis that " the Anglophones attained

a higher level of English language mastery prior to and during their schooling, and as depicted in the interdependence hypothesis, are therefore capable of mastering French reading comprehension in a more efficient manner."(p.107)

Results from several studies on reading comprehension for bilingual students in elementary and secondary schools (Cziko,1978; Carey,1987;Favreau and Segalowitz,1982; Malicky, Fagan & Norman,1988) support the view that "prior knowledge and transfer of skills" (Carey,1987) are parameters of positive achievement. Carey's (1987) research comparing within-subjects scores at the High School level indicates that comprehension scores are higher in the students' first language for Anglophone students. The study reveals that for Anglophones the level of second-language mastery is maintained but it does not attain the level of the first language reading comprehension at any grade level. Results also show that for Francophones, English scores are higher than their French scores which were lower than the Anglophones' scores. "Evidence supports the view that the acquisition of reading skills and strategies are independent of specific language and that transfer of skills and prior

knowledge are the most plausible account of the data presented".(p.103) Furthermore researchers (Fillmore, 1986; Malicky et al,1988) point out that the difficulties experienced by second language readers in the language acquisition process may be due to their inability to make use of syntactic, semantic, and discourse cues that ordinarily serve as sources of information for fluent first-language readers.

Reading Time

This present study also looks at the time it takes for students to read in their dominant language versus their non-dominant language and also what happens for more balanced bilinguals. (Favreau & Segalowitz,1982) Reading time is important in respect to memory encoding as related to its effect on comprehension. (Smith,1978) Increased time taken to decode can hinder comprehension.

Some immersion students could be working twice as hard and for a longer time in their non-dominant language to obtain the same or lower results than in their dominant language.(Genesee, 1987) The present investigation at a post- secondary level addresses the same question as Carey's (1987) research: "While prior knowledge may be stored in a supralinguistic form, the question remains as to how much exposure it takes to

access this information via different languages". (p.105)

The question of a time trade-off in reading comprehension tasks was also addressed in the important findings of Favreau and Segalowitz (1982) who concluded that their results "suggest the possibility of a trade-off when individuals are highly skilled in their two languages". (p.339) Comparison of processing rates for the two groups (equal-reading- rate and unequal-reading-rate groups) revealed that subjects in the unequal-reading-rate group were faster than subjects in the equal-reading-rate group on dominant language materials but slower on non-dominant language materials. As Favreau and Segalowitz (1982) suggested there is a trade-off in automaticity when two languages are stored equally. Their study is supported by Crawford (1986) who found that differential encoding speeds were indicated by significantly longer French than English latencies in immersion and extended French subjects. Consequently these studies suggest the trade-off to be more lexical availability but less automaticity because of more complex processing. Moreover French lexical access times for immersion students were faster than they were for extended French

program students.This would imply that some bilinguals would be slower readers than some unilinguals of the same ability and in similar situations and that lexical access time is inversely correlated with amount of time the language is used.

Stress/anxiety

It has been widely reported that at a university level most students experience stress. (Arnold,1983;Bjorksten,1983;Goodman,1984). When another factor, learning in a second language, is added stress may increase.(Edward's & al,1984) The management of stress is considered to be an important variable in successful language learning.(Horwitz,1986).

More specifically, reading comprehension can be reduced by the stressful and frustrating conditions of an overwhelming amount of unknown vocabulary. An overload on working memory due to less automatic decoding when reading in one's non-dominant language can also increase the level of general stress and anxiety. General anxiety can cause fixations and tunnel vision, slowing down the reading pace thereby minimizing the level of comprehension. (McNamara,1967; Smith,1978) Edwards & al (1984) indicate a possible language teacher intervention as a factor that "may

have helped to increase students' self-confidence and to lower anxiety, thereby helping to lower the affective filter." (p.281) The level of optimal efficacy is affected by the emotional activation which varies for individuals depending on such variables as personality types, i.e. extrovert, introvert, locus of control (Berlyne,1965;Hebb,1974;Carey,1968). As Carey (1968) showed for some individuals who scored high on the Taylor and anxiety scales even moderate increases in activation or anxiety can cause substantial reduced learning of second language vocabulary.

The question of stress/anxiety addressed in this study considers both the internal response aspect of the reading experience and the external stimulus aspects perceived as stressors. This operational definition of the experience of stress\anxiety was chosen because of the complexity of the interaction between the reader and the reading material. In past and present status of the stress concept it is noted:

> "emotions-love, hate, joy, anger, challenge, and fear-as well as thoughts, also call forth the changes characteristic of the stress syndrome. In fact, psychological arousal is one of the most frequent activators. Yet it cannot be regarded as the only factor, since typical stress reactions can occur in patients exposed to trauma.."(Goldberger & Breznitz, 1982, p.14).

Both personality variables, i.e. emotional traits and cognitive processes, and outside stressors, i.e. unknown vocabulary, different grammatical and lexical arrangements, different cultural contexts, interact in the reader when confronted with difficult reading material. Consequently an attempt is made in the present study to 1) measure anxiety by means of Speilberger's (1983) State-Trait Inventory and to 2) extract the stressors identified and defined by the subjects interviewed and to consider their impact on reading comprehension in L1 and L2.

Speilberger's State-Trait Anxiety Inventory chosen to assess the student's anxiety, was translated and piloted with French-English bilinguals.(Bergeron, 1976). Bergeron in his cross-cultural considerations notes that "the tendency for bilingual subjects to obtain lower scores on anxiety scales written in their first language might be attributed to the fact that they are capable of greater semantic differentiation in this language."(p.171) Bergeron compares the psycholinguistic factor of bilinguality to the educational level factor and its similar influence on anxiety scores. "Without necessarily calling upon a psychoanalytic-type mechanism of intellectualization,

it seems conceivable to think that subjects are more reluctant to rate themselves high on a scale item which they can finely weigh."(p.170)

A general "anxiety inventory score" and the reading time might give an indication of level of difficulty experienced. A longer time expended with a lower score could be stress indicators of "at risk" students since greater time and effort would not equal positive results. Effort defined by Goldberg, Selye & Mandler (1982) is considered as an added stressor, though not necessarily perceived nor experienced similarily nor universally. The reader's self-description of his\her reading experience in a second language could bring to awareness, for both the student and the teacher, the specific language problems and the opportunity to deal with the stress experienced by individual student from whatever socio-cultural group. Consequently the reader's self-description of the reading experience in a second-language may be necessary to further clarify the relationship between stress and reading comprehension.

Motivation

Gardner and Smythe (1974) considered the concept of motivation as it relates to the acquisition of a second language. Their empirical results support the postulate that motivation explains individual differences in second language acquisition. Motivation is defined in terms of goals (orientation), and the amount of effort (motivational intensity), the student is willing to expend when reading in a second language. According to Gardner and Smythe there are two types of orientation; the integrative and the instrumental orientation. The integrative includes reasons which focus on the importance of interaction and communication with members of that language group. As Graham (1984) notes integrative motivation becomes assimilative motivation which often explains the high rate of assimilation among minority groups. An example would be the learning of the majority language by a minority group in order to be able to be accepted as a member of the majority culture. Instrumental motivation focuses on learning the language for utilitarian purposes with no obvious intention to interact socially, i.e. a majority member learning a minority language to gain employment. Gardner and

Smythe's study shows that "motivational intensity and desire to learn French were highly related to achievement indices at each grade level."(p.23) Both integrative and instrumental motivation would facilitate and speed up the process of learning,i.e. the acquisition of new vocabulary in a variety of socio-cultural contexts. The oral element becomes prior-knowledge for reading comprehension.

More specifically motivation and purpose guide the reader in discriminating what is important thereby using focusing and structuring strategies when reading. (Haller,Child, & Walberg, 1988; Mulcahy, Marfo, Peat, Andrews, & Clifford, 1986) Additionally, the psychological processes of the reader such as the internal self-talk which is the expression of internalized attitudes can impact the student's reading comprehension. Positive self-talk (Bandura,1982) would elp the student look for ways to improve comprehension and by understanding and being aware of cognitive strategies that would enhance processing the material and lessen the anxiety that blocks comprehension.

Self-esteem, learned helplessness and internalized self-defeating attitudes may result from language problems in the developmental stages typical of bilingual children (Miller, 1984). The literature in

this area considers the concept of "deficit" versus "differences". Miller points to the difficulty of defining what is a problem and what is normal variation even in unilinguals' language development and even more so for bilinguals' language development. How the adults have interacted with bilingual children correcting and labeling language usage can have negative effects on a child's self-esteem. Furthermore the "threshold hypothesis" claims:

> "for there to be no negative effects on cognitive growth associated with delayed (bilingual) language development, a certain level of first language proficiency must be attained. This is not an absolute level, but changes with the varying demands made on a child's linguistic systems through life. To benefit from the reported advantages of being bilingual an even higher threshold has to be reached. If the lower threshold is not reached the result is semilingualism." (Miller, p.95)

Smith (1978) in the line of psychologists who recognize that emotional and personality maladjustment occur in conjunction with reading difficulty concludes that "emotional and personality maladjustments may operate as a cause of reading disability, as an effect of reading failure, or as both cause and effect" (p.479).

Consequently the interviews in the present study will be helpful in exploring students' motivation and their experience of reading in a second language.

Generally, the reader with positive motivation looks for ways to improve comprehension and by becoming aware of cognitive strategies lessens the anxiety that blocks comprehension.

Summary

Research on reading comprehension in bilingual education is an active research area. The mixed findings reflect the educational and testing conditions interacting with the developmental stages of reading skills acquisition as well as an individual's cognitive and emotional functioning. This literature review addressed research done in two socio-linguistic contexts, the minority and majority situations. Hidden political agendas with inherent biases can influence results found for second language learners. The theory of additive and subtractive bilingualism can be a reflection of social conditions interacting with political agendas. The studies comparing reading scores of minority and majority groups are not always clear on the language of the testing procedure. When testing is in the majority's language the minority samples scores are not comparable. In the literature reviewed testing is usually done in the majority's language. This present study's testing is in both languages.

The methodological problems in bilingual research consist of difficulties in establishing

linguistic equivalence in translation especially in the area of testing, the variability in family and educational backgrounds of subjects even within one language group, and the difficulty in establishing language proficiency in bilingual subjects from different social and academic contexts.

The literature review for anxiety/stress related to reading comprehension in a second language is minimal. However a factor coined the "affective filter" was shown to increase or diminish dependent on the learning conditions within the context of second language acquisition through subject matter teaching.

Integrative and instrumental motivation was found to affect successful second language acquisition. Chapter three will describe the methodologies and instruments used in the present study designed to investigate 1) reading comprehension and time taken to read in English and French 2) stress experienced and 3) motivation of a sample of first year bilingual university students studying in French.

Chapter 3

METHOD AND PROCEDURES

Rationale for Methodology

Two methods of inquiry are employed in this study; a quantitative method to collect information on reading comprehension, reading time and anxiety, and a qualitative descriptive method to obtain an appreciation of the participants' perceptions and personal experience when reading in L1 and L2. As Colaizzi(1973) indicates there is room for both quantitative and qualitative approaches in scientific inquiry, one providing more "theoretical distance from ordinary experience"(p.49) the other recognizing and affirming the validity of "experience (which) is there, for all of us and (it) cannot be objectively eliminated".(p.52) Because of the numerous factors influencing reading comprehension this procedure enables the researcher to gain an understanding of the components and their interaction, that is stress, level of bilingualism, language proficiency, and their effect on reading comprehension.

Therefore an informal descriptive approach using quantitative and qualitative procedures was chosen to investigate the question of reading

comprehension in the students' first and second language. This approach was chosen for two reasons: 1) the convergence and interpretation of quantitative data with qualitative data as suggested by Georgi (1971) would provide contextual insight from the subjects' perspective and 2) convergence by triangulating the quantitative data with the qualitative descriptive analysis can increase reliability.

The present chapter contains a description of the setting, of the sample, and of research instruments used in the quantitative part of the study as well as a summary of the procedures for the collection of qualitative information. Finally, an overview of data analysis is provided in this chapter and a statement of limitations inherent in the study is presented.

Setting

A university educational setting provided the researcher with the opportunity to conduct an experimental laboratory experience with a first year introductory psychology class. It is within the ecologically valid context of everyday student-life through the medium of classroom laboratory and seminar

time that a testing process and informal interviews were conducted.

Sample

The sample consisted of forty-three first year university students in an Introductory Psychology class taught in French. For the purpose of this study the socio-linguistic grouping was obtained from a questionnaire (see appendix 6) and from a classroom rating exercise which established their self-perception of language dominance on both oral and written expression. (table 1.) The students also had a choice between an English and a French version of the Spielberger's State and Trait Anxiety Inventory instrument.(table 1.) The forty-three students were participants in both the quantitative and qualitative aspect of this study. Interviews were conducted with all forty-three subjects. Fifteen representative "interview protocols" were chosen on the basis of consistency and clarity of common concerns for the more extensive descriptive analysis. Five case studies were from the Anglophone socio-linguistic group, five from the Francophone group (outside Quebec) and five from the Quebec group.

Table 1

SOCIO-LINGUISTIC GROUPING, LANGUAGE DOMINANCE SELF-PERCEPTION AND CHOICE ON STAI

Subjects	Socio-linguistic group	Language dominance	* Choice on STAI
21	Anglophones	21 English oral	* 18 Eng.
		21 Eng. read/write	3 Fr.
15	Francophones	8 English oral	* 6 Eng.
			2 Fr.
		4 French oral	4 Fr.
		3 bilingual oral	2 Eng.
			1 Fr.
		7 Eng. read/write	5 Eng.
			2 Fr.
		6 Fr. read/write	4 Fr.
			2 Fr.
		2 bilingual read/write	1 Eng.
			1 Fr.
7	Quebecois	1 English oral	7 Fr.
		6 French oral	
		1 Eng. read/write	
		6 Fr. read/write	

* Spielberger's State and Trait Anxiety Inventory. The students had the choice between the French and the English version.
* One of the three Anglophone students who chose the French version also had a higher French score in for the story "Faim".(table 2)
* Of the fifteen Francophone students, eight chose the English version and seven chose the French version.

Carey (1987) used the BICS/CALP distinction as did Cummins (1987) who defines the oral and reading/writing dimensions as 1) "basic interpersonal communication skills required in a social situation "(BICS), 2)"cognitive, academic, linguistic proficiency (CALP) which puts the emphasis on decontextualized textual processing" (p.104). The reading and writing skills pertain to academic settings with the verbal emphasis while the oral skill pertains to social settings with more of a non-verbal component. However reading and writing are different skills and students may be successful in one and not the other. Four students from the fifteen Francophones rated themselves differently on these two dimensions.(table 1)

The subjects' self-perception in language dominance in reading and writing was then compared to their reading comprehension scores obtained for this research. Table 2 shows the discrepancies between the actual obtained reading comprehension scores and the students' self-perception of their language dominance in reading and writing. The discrepancies between some students reading/writing rating and their actual reading scores in French and English could be due to the writing component of the rating scale.(table 2)

For the Within-subject analysis, the students were grouped by language dominance as determined by their reading scores (the students higher scores were compared to their lower scores) to evaluate the correspondance between their English and French reading scores. Three subjects were dropped because of their equal performance on the English and French tests. For the Within-subject analysis, the students were grouped by language dominance as determined by their reading times (the students longer times were compared to their shorter times) to evaluate the correspondance between their English and French reading times. The reading scores and the reading times are compared to the students self-perception in reading and writing.(table 2a and 2b)

The discrepancies between reading scores, reading times and self-perception are due to 1) the difficulty of measuring one's bilinguality, self-perception is relative to situations and topics 2) the limitations of the instruments, the text and its translation and from 3) the lack of correspondence between reading comprehension and reading\writing, since writing is a different and often more difficult process and may vary for different topics.

Language dominance perception is relative to how one rates oneself as compared to others. For example, one student rates himself as French dominant in reading-writing situations and English dominant in oral situations. This concurs with his "French immersion" educational background. However his comprehension score is higher in English providing some evidence, using these materials, that English oral dominance is stronger than the French reading/writing dominance in his case since the oral perception correlates with the actual higher English reading comprehension score. For the students who perceived themselves as French dominant but had higher English reading comprehension scores, the discrepancy could be due to the difficulty in assessing the influence of the English language in everyday life, consequently English becoming more dominant. This is the case for one Quebecois living in Alberta and 5 Francophones (outside Quebec), with the other Francophone achieving equally in both languages. Seven Francophones perceived themselves as dominant in English but actually did better in French(5) or equally(1) as well. These students rated their dominance as 45% and 55% which could account for this discrepancy.

In all three socio-linguistic groups both languages are known to some degree. In the Anglophone group and the Quebec group language dominance is easier to establish, the students perceive themselves as better in English or French and the scores concur except for 4 out of 28 students because their first language and identity is less ambiguous than the Francophones (outside Quebec). For this latter group only 2 out of 15 students have matched scores with self-perception of reading/writing skills.

For all forty-three students the questions remain 1) how accurate is the reading test in measuring linguistic proficiency? and 2) what criteria did the students use to rate themselves? (Beardsmore,1982; p.69) The difficulty in establishing language dominance is a major handicap in bilingual research. Consequently in the present study the reading scores and reading times are two measures of dominance used to evaluate correspondance between languages of text. To summarize, this study presents four attempts to determine language dominance: 1) self-perception rating on oral and verbal rating scale 2) choice on STAI 3) reading scores and 4) reading times. (tables 1, 2a, 2b)

Table 2 (a)

READING SCORES AND LANGUAGE DOMINANCE SELF-PERCEPTION

Subjects	Dominance perception in reading & writing	Reading Scores * (Stories)
Anglophones	21 English	19 higher in English (7DF,4FD,3HR,5RH)
		2 higher in French (1FD,1HR)
Francophones	7 English	1 higher in English (1HR)
		5 higher in French (1FD,1DF,1HR,2RH)
		1 same score (1HR)
	6 French	5 higher in English (1RH,3FD,1HR)
		1 same score (1FD)
	2 bilingual	1 higher in English (1DF)
		1 same score (1HR)
Quebecois	6 French	4 higher in French (2RH,1HR,1DF)
		2 higher in English (1RH,1FD)
	1 English	1 higher in English (1HR)

*(Stories; D=Dreams, F=Faim, R=Reves, H=Hunger and the numeral indicates the number of students who read that text.)

Table 2 (b)

READING TIMES AND READING SCORES

Subjects	Reading Times * (Stories)	Reading Scores * (Stories)
Anglophones (21)	19 shorter time in English 2 longer time in French	19 higher in English (7DF,4FD,3HR,5RH) 2 higher in French (1FD,1HR)
Francophones (15)	6 shorter time in English (3FD,2HR,1DF) 1 shorter time in French (1RH)	7 higher in English (2HR,3FD,1DF,1RH)
	3 longer time in French (1FD,1DF,1HR) 2 longer time in English (2RH)	5 higher in French (1FD,1DF,1HR,2RH)
	2 longer time in English (1HR,1FD) 1 longer time in French (1HR)	3 same score (2HR,1FD)
Quebecois (7)	3 shorter time in French (1HR,2RH) 1 longer time in French (1DF)	4 higher in French (2RH,1HR,1DF)
	1 shorter time in French (1RH) 2 longer time in French (1HR,1FD)	3 higher in English (1RH,1HR,1FD)

*(Stories; D=Dreams, F=Faim, R=Reves, H=Hunger and the numeral indicates the number of students who read that text.)

Research Instruments and Sources of Data

As mentioned previously a questionnaire was employed to assess the perceptions of first year university students in regard to their linguistic proficiency.(Appendix 6) Spielberger's State and Trait Anxiety Inventory was used to assess the anxiety of the students.(Appendix 3) Reading scores from a French and an English comprehension test (Appendix 5) was collected for each student. Reading times from an English and French text (Appendix 4) were collected for each student. Finally, a 20-30 minute oral interview in both languages was conducted with each student to collect "life-world" contextual data. After listening to all forty-three recorded interviews the researcher analyzed fifteen interviews representative of the three socio-linguistic groups.

The researcher in the capacity of a laboratory assistant in the Psychology class throughout both university terms met with the class as a group and individually. Participation in the laboratory was not graded but was framed as an opportunity for experiential learning about research. A debriefing session was held with the class to inform the students on the results of the laboratory project.

1. Reading Texts (Appendix 4)

The English texts, "Hunger" and "Dreams" are selections from "Introduction to Psychology" (Atkinson, Atkinson, Smith, & Hilgard, 1979) assigned to first year psychology students. The French texts, "La Faim" and "Les Reves" are from Belanger's (1980) professional translation. "Hunger" has 1651 words and 82 sentences while "La Faim" has 2018 words and 87 sentences. "Dreams" has 1592 words with 76 sentences while "Les Reves" has 1628 words with 80 sentences. "Other translated texts repeatedly verified the common- place finding that French texts do use more words than English to express the same idea."(Whittle,1986 p.23) The four texts were read from Varnhagen's 1987 computer program. The student self-monitored the pace at which each sentence would appear on the screen. The computer recorded elapsed time in seconds for each sentence. This format is different from Whittle (1986) and Carey (1987) who used the written texts. The students were assigned randomly to read one text in French and the other in English, in two different orders. This divided the class into four groups: 1) "Faim" and "Dreams" 2) "Reves" and "Hunger" 3) "Dreams" and "Faim" and 4) "Hunger" and "Reves". The computer reading followed by pencil and paper testing was done at two different times with approximately 35 days in between. (table 3)

Table 3 - Counterbalanced Arrangement of Computer texts

	Position of Text	
Students	First	Second
5 Anglophones 5 Francophones 1 Quebecois	French Faim	English Dreams
5 Anglophones 3 Francophones 3 Quebecois	French Reves	English Hunger
4 Anglophones 5 Francophones 2 Quebecois	English Hunger	French Reves
7 Anglophones 2 Francophones 1 Quebecois	English Dreams	French Faim

Table 3 - Summary

STUDENTS	DREAMS	FAIM	REVES	HUNGER
Anglophones	12(7+5)	12(5+7)	9(5+4)	9(4+5)
Francophones	7(2+5)	7(5+2)	8(3+5)	8(5+3)
Quebecois	2(1+1)	2(1+1)	5(3+2)	5(2+3)
Total	21	21	22	22

* (first, second) position of text

Reading comprehension Tests (Appendix 5)

The tests for each reading selection are identical to those used in Whittle's (1986) and Carey's (1987) research. A pool of true/false and multiple choice questions was developed, piloted and redeveloped.(Whittle,1986) The criteria for the final set of questions was that they be representative of a typical exam that is currently in use for testing bilingual students studying in a first year university psychology course. Each passage has 9 multiple choice and 15 true and false questions and was professionally translated and verified by three teachers. (Appendix 4) This objective test was developed with the purpose of testing immediate reading comprehension.

Reading comprehension Time

Furthermore, the text read on the computer was computer-timed sentence by sentence. An analysis of the total time for each passage provide time comparisons within subjects, between subjects, between texts and between translations. However there are 5 more sentences in "Faim" compared to "Hunger" and 4 more in "Reves" compared to "Dreams". As previously noted it takes more words and sentences in French. The overall comparison of time between translation of

selections is based on comprehension of content and presentation of the same concepts even though the translated forms of each selection are not equivalent in the number of words and sentences. The assumption is that it is the comprehension of ideas that is the limitation in reading times not the few extra words. (Limitations p.53).

Spielberger's State-Trait Anxiety Inventory (STAI) (Appendix 3)

Spielberger's State and Trait Anxiety Questionnaire was administered before the reading exercise, to all students in the language of their choice, French or English. Twenty-six students chose the English version and seventeen chose the French version. (see table 1) Spielberger's STAI was used because of the availability of a French translation and because of previous successful "bilingual" studies performed with it by Bergeron (1982).

The STAI is a 40 item self-evaluation inventory designed to measure and distinguish between transitory anxious states (A-state) and relatively stable personality dispositions toward anxiety (A-trait) (Spielberger et al.,1970). Twenty items ask the individual to describe how he/she feels at the

particular moment (A-state items). Twenty items ask how he/she generally feels (A-trait items)

The STAI has been used extensively in anxiety research (Alexander et al.,1975; Bergeron, 1982; Bird, 1979; LeBoeuf,1977; Martuza & Kallstrom,1974; Townsend et al.,1975). The test-retest reliability coefficients of the A-trait scale range from .73 to .86, which are high. Those for the A-state scale, .16 to .54, tend to be low, as would be expected for a measure designed to reflect the influence of situational factors. Bergeron's findings in the development of a French form are .43 to .66 for the A-state scale, (lower as expected and consistent with the definition of a transitory emotional state) and .86 to .89 for the A-trait scale. Internal consistency coefficients, which Spielberger considers a more meaningful index of the reliability of the A-state scale are high, .83 to .92 (Spielberger et al.,1970). Bergeron found the internal consistency to be .86 to .90 for the A-state scale, and .88 to .89 for the A-trait scale. The validity data is reported to be satisfactory (Bergeron, 1982; Kendall, Finch, Auerbach, Hooke, & Mikulka, 1976; Martuza & Kallstrom, 1974; Spielberger et al., 1970).

Qualitative Data Collection Procedures

1. Setting

The phenomenological question is, "What is the nature of the lived experience of these Francophone, Anglophone and Quebecois students reading in French whether it is their dominant or their non-dominant language"? As a researcher I was especially interested in how these students described their bilingual experience so as to better understand how stress and motivation affects reading comprehension.

2. Intentionality

Both Georgi and Colaizzi underline the importance of "awareness of assumptions". In quantitative research this is dealt with by the researcher's explicit expression of biases or perspective. The expressed intention of the researcher is the counterpart in qualitative studies. My biases and intentions come from my bilingual experience as a native Franco-Albertan educated in both languages, my teaching experience with Canadian Natives and my counsellor training. The setting of the interview places the two parties in the roles of interviewer and interviewee. In my attempts to check my biases I sought objective view points from my supervisor and

other professors. Also by bracketing, (Jennings, 1986) "suspending natural attitude", I would attempt to gain perspectives from people with other experiences.

3. Procedure

The qualitative data were collected during laboratory time: the students were interviewed individually, were asked to answer a questionnaire and write a paragraph. Furthermore in the second semester, the students participated in small-group seminars to discuss their experience of stress when reading in their non-dominant language. This procedure follows Colaizzi's methodology with its rigorous analysis by checking for consistency in subjects' expression of their motivation and experience of stress.

Five representative protocols from the three socio-linguistic groups were analyzed extensively following Georgi's and Colaizzi's descriptive method. These fifteen interviews provide additional information on how some of these first year university students actually perceive the factors affecting their reading comprehension,i.e. level of language competency, motivation, stress. An attempt was made by the researcher to transcribe truthfully the oral expressions of the students indicating with signs,

exclamation marks, pause, and underlining, the emphasis and the feelings communicated by the students.

To analyze the students' expressed description of their experience the researcher used Colaizzi's (1975) and Georgi's (1971) protocol analysis method which follow this procedure: 1) a first reading of the description to get a sense of the whole 2) a second slow reading to discover meanings and transitions in meanings 3) reducing and eliminating redundancies but keeping all units 4) reflection on the units and transformation of meaning into psychological science,i.e. themes derived from the "everyday naive language" of the subject.

Example:

Natural Unit	Central Theme
1. It just makes you a lot more flexible, period. If you go travelling, French, English and Spanish are the main languages used so it's an absolute with two languages it's possible to understand a third or a fourth...H'M'H'M.. other than that of course it's great for a job, you can always work for the government, or be a teacher, or whatever...	1. Motivation with both the enrichment and pragmatic rationale.
2. Well, the disadvantage of studying in French of course it's a lot harder ..but you get that down... there are many advantages.	2. Difficult but worth it.
3. Oh, you have to be very devoted, it's really demanding on your time.	3. Time demands.

Data Analysis

The quantitative data were keyed into the MTS computer system. Statistical tests involved the computation of 6 one-way ANOVAS and, in the necessary cases, the Scheffe multiple comparison of means; and of 4 T-tests. Confirmation of the hypotheses as a result of the analysis was set to be contingent upon the attainment of a ($p \leq .05$) level of significance. In addition the qualitative analysis of the interview protocols which were all transcribed by the researcher was conducted using Colaizzi's and Georgi's format of procedure.

Limitations

1. Self-report scales have an inherent limitation on their subjectivity. The self-evaluation questionnaires, (STAI, socio-cultural and language self-perception) are susceptible to this criticism.
2. The study was limited to first-year university students. The researcher would not recommend generalizing the results of this study beyond the first-year level.
3. The researcher would not recommend generalizing the results concerning the Quebecois because of the small number of subjects in this group.

4. The reading comprehension test has its inherent limitation due to the ubiquitous problem of translation difficulties.

5. The research was done in the context of the students laboratory assignment in which they participated at their convenience at different times of the day.

6. One difficulty in this study was in establishing first or dominant language of the Francophones, (Carey,1988;McEwen,1984) of some Quebecois subjects and of three Anglophones.

Chapter 4

QUANTITATIVE RESULTS

The present chapter contains an analysis of the quantitative data. It has been hypothesized there will be no differences among the Anglophones, Francophones and Quebecois in regard to measures of reading comprehension scores, reading time, and anxiety. The variables stress and motivation will be analyzed qualitatively in chapter 5.

The chapter contains the following structure for each of the three variables in regard to socio-linguistic group differences and language dominance: a statement of the hypothesis, and a relevant statistical analysis.

1. Reading comprehension scores

Hypothesis 1.1

There will be no difference among the three socio-linguistic groups in French reading comprehension scores.

There are no significant differences among the mean scores of Anglophones, Francophones and Quebecois. (Table 4). Consequently Hypothesis 1.1 is accepted.

Table 4

ANALYSIS OF VARIANCE: READING COMPREHENSION IN FRENCH

Group	Mean	SD	Minimum	Maximum	N
Anglophones	16.5238	2.5616	11.00	20.00	21
Francophones	18.0000	3.1848	13.00	22.00	15
Quebecois	16.7143	1.4960	14.00	19.00	7

Source	Sum of Squares	df	Mean Square	F	p
Between	20.1240	2	10.0620	1.404	.2575
Within	286.6667	40	7.1667		

Hypothesis 1.2

There will be no difference among the three socio-linguistic groups in English reading comprehension scores.

There is a significant difference between at least two of the sample means (Table 5). Therefore, the Scheffe multiple comparison of means has been computed to determine which pair(s) of the three sample means differ from one another. Hypothesis 1.2 is rejected.

Table 5

ANALYSIS OF VARIANCE: READING COMPREHENSION IN ENGLISH

Group	Mean	SD	Minimum	Maximum	N
Anglophones	18.7619	2.1658	15.00	22.00	21
Francophones	18.0000	2.5912	15.00	23.00	15
Quebecois	15.8571	2.8536	13.00	20.00	7

Source	Sum of Squares	df	Mean Square	F	p
Between	44.3101	2	22.1550	3.7445	.0323
Within	236.6667	40	5.9167		

Scheffe Test

MEAN	GROUP	3	2	1
15.8571	Grp 3 - Quebecois			
18.0000	Grp 2 - Francophones			
18.7619	Grp 1 - Anglophones	*		

The Scheffe procedure indicates that the sample mean for the Anglophone group is significantly higher than that of the Quebec group. There are no significant differences between the other pairs of sample means.

The average of the reading scores for this class of forty-three students is higher in English than in French.

Hypothesis 1.3

There will be no within-subjects difference between the dominant language and the non-dominant language in reading comprehension scores.

There is a significant difference (Table 6). Students score significantly higher in their dominant language. Hypothesis 1.3 is rejected.

There is a high correlation (r=.779) between students' scores in their dominant language and their scores in their non-dominant language indicating that when subjects scores were high in their dominant language they tended to be high in their non-dominant language, when subjects were low in their dominant language they tended to be low in their non-dominant language. (Table 6)

Table 6

T-TEST ON DOMINANCE AND NON-DOMINANCE FOR READING COMPREHENSION SCORES

Variable	cases (40)	Mean	SD	CORR.	2-TAIL Prob.
Dominant		19.025	2.069	.779	.000
Non-Dom.		16.200	2.574		

FOR ENGLISH AND FRENCH DOMINANT AND NON-DOMINANT

Variable	cases	Mean	SD	T-Value	1-TAIL Prob.
Dominant language				.22	.415
Anglophones	29	19.069	2.203		
Francophones	11	18.909	1.758		
Non-Dominant language				.85	.162
Anglophones	29	16.413	2.784		
Francophones	11	15.636	1.912		

2. Reading Time

Hypothesis 2.1

There will be no difference among the three socio-linguistic groups in French reading time.

There is a significant difference between at least two of the sample means (Table 7). Therefore, the Scheffe multiple comparison of means has been computed to determine which pair(s) of the three sample means differ from one another. Hypothesis 2.1 is rejected.

Table 7

ANALYSIS OF VARIANCE FOR READING TIME IN FRENCH

Group	Mean (Minutes)	SD	Minimum	Maximum	N
Anglophones	23.6857	7.741	13.4	42.00	21
Francophones	16.6800	6.152	7.4	30.00	15
Quebecois	15.1529	4.2645	8.4	18.70	7

Source	Sum of Squares	df	Mean Square	F	p
Between	614.8006	2	307.4003	6.6919	.0031
Within	1837.4469	40	45.9362		

Scheffe Test

MEAN	GROUP	3	2	1
15.1529	Grp 3 - Quebecois			
16.6800	Grp 2 - Francophones			
23.6857	Grp 1 - Anglophones	*	*	

There is a significant difference between the sample means for the Anglophone group and the Francophone group. The sample means for the Anglophone group and the Quebec group are also significantly different from each other. The Anglophone group on average would take more time in reading when the text is in the French language than both the Francophones and Quebecois.

Hypothesis 2.2

There will be no difference among the three socio-linguistic groups for English reading time.

There is no significant difference among the sample means (Table 8). Therefore, the Scheffe multiple comparison of means has not been computed. Hypothesis 2.2 is accepted.

Table 8

ANALYSIS OF VARIANCE: READING TIME (MINUTES) IN ENGLISH

Group	Mean	SD	Minimum	Maximum	N
Anglophones	13.6476	2.9911	6.6	19.00	21
Francophones	14.5933	4.5976	9.1	26.00	15
Quebecois	16.4857	3.8972	12.4	22.10	7

Source	Sum of Squares	df	Mean Square	F	p
Between	42.8325	2	21.4163	1.5135	.2325
Within	565.9903	40	14.1498		

Hypothesis 2.3

There will be no within-subjects difference between the dominant language and the non-dominant language for reading time.

There is a significant difference for reading time when the forty-three subjects are reading in their dominant language compared to when they are reading in their non-dominant language (Table 9). Hypothesis 2.3 is rejected.

There is a high correlation (r=.601) indicating that when subjects' time were high or low in their dominant language they also tended to be high or low in their non-dominant language. (Table 9)

Table 9
T-TEST ON DOMINANCE AND NON-DOMINANCE FOR READING TIME

Variable	cases (43)	Mean	SD	CORR.	2-TAIL Prob.
Dominant		13.6163	3.493	.601	.000
Non-Dom.		20.674	7.083		

FOR ENGLISH AND FRENCH DOMINANT AND NON-DOMINANT

Variable	cases	Mean	SD	T-Value	1-TAIL Prob.
Dominant language				- .21	.417
Anglophones	33	13.679	3.061		
Francophones	10	13.410	4.855		
Non-Dominant language				-1.96	.028
Anglophones	33	21.803	7.288		
Francophones	10	16.950	5.020		

When students are reading in their non-dominant language, the analysis shows $p<.028$ (1-TAIL) which is significant. For the English dominant students their reading time in their non-dominant language (French) is longer than for the French dominant students reading in their non-dominant language (English). Hypothesis 2.3 is rejected.

3. Anxiety Scores (STAI)

Hypothesis 3.1

There will be no difference among the three socio-linguistic groups in state anxiety.

There are no significant differences among the sample means (Table 10). Consequently Hypothesis 3.1 is accepted.

Table 10

ANALYSIS OF VARIANCE FOR STATE ANXIETY

Group	Mean	SD	Minimum	Maximum	N
Anglophones	46.00	7.225	34.00	59.00	21
Francophones	48.533	7.199	38.00	62.00	15
Quebecois	47.00	8.4656	36.00	62.00	7

Source	Sum of Squares	df	Mean Square	F	p
Between	56.1736	2	28.0868	.5107	.6039
Within	2199.7333	40	54.9933		

Hypothesis 3.2

There will be no difference among the three socio-linguistic groups in trait anxiety.

There is no significant difference among the sample means (Table 11). Hypothesis 3.2 is accepted.

Table 11

ANALYSIS OF VARIANCE FOR TRAIT ANXIETY

Group	Mean	SD	Minimum	Maximum	N
Anglophones	50.4762	9.0367	38.00	69.00	21
Francophones	53.8667	11.1218	36.00	75.00	15
Quebecois	51.7143	7.8467	45.00	67.00	7

Source	Sum of Squares	df	Mean Square	F	p
Between	100.7628	2	50.3814	.5396	.5871
Within	3734.4000	40	93.3600		

Summary of Quantitative Results

Null Hypothesis	Result
1.1: No difference in French reading scores.	Accepted
1.2: No difference in English reading scores.	Rejected
1.3: No within-subject difference:reading.	Rejected
2.1: No difference in French reading time.	Rejected
2.2: No difference in English reading time.	Accepted
2.3: No within-subject difference: time.	Rejected
3.1: No difference in State anxiety.	Accepted
3.2: No difference in Trait anxiety.	Accepted

Chapter 5

QUALITATIVE RESULTS

The present chapter contains a descriptive analysis of the qualitative data. The phenomena investigated are motivation and stressors of the three socio-linguistic groups, Anglophones, Francophones and Quebecois when they are reading in French and English.

The chapter contains the following thematic structure based on Colaizzi's (1975) and Georgi's (1971) descriptive methodologies for each socio-linguistic group as previously defined. Each group description begins with a socio-linguistic profile of the particular group of subjects. Next are presented the clusters of themes validated in the original protocols: 1) Identity, 2) Motivation,goals, 3) Functions of language, 4) Stress, 5) Reading in their second language. There are overlaps between the themes; for example one of the functions of language, employment, is also considered in the motivation theme. Concluding remarks follow each descriptive analysis.

An attempt has been made to transcribe as faithfully as possible the students' oral language. I have used various signs to show emphasis, pauses, feelings.

Anglophone category

Socio-linguistic profile

After reading all twenty-one protocols I chose five students from the ones who identified themselves as Anglophones. The educational background of these five students is representative of the student population at Faculte Saint-Jean.(Appendix 2) Their educational background varies from full immersion (one student) to partial immersion (two students) to French as a second language (two students) programs. For this group of twenty-one subjects both parents are Anglophones and English is spoken in the home. Two of the five students come from small towns in Alberta while the others are from the city. All these students indicate that they speak French only at school and very rarely otherwise as indicated by the following typical excerpt.

.."Outside of here I don't speak French at all. My parents aren't French, I have friends who speak French but just from High School, they're not interested in speaking French just for practice...when I want to read for pleasure I don't read in French I read in English..I don't listen to music in French or T.V....so I don't get any practice outside of school..."

1. Identity

Student context:

Like all students, these subjects realize the need for an education and often the need to support themselves while studying. A certain amount of stress stems from the adaptation to their first year of university, common to all first year students, of working while studying and developing new relationships away from home.

"...I don't like living like I am right now, struggling student...I'm not making much money... I want to be able to take care of me."

Social needs:

"...It's a lot different here in the city than where I come from that is just a small town...I don't have many friends here, all my friends are back in town."

"...It's sort of hard 'cause you get lonesome 'cause like right now my mom misses me lots and it's just different, you know friends... but school sure keeps me busy don't really have time that much right now to 'give' friends."

New responsibilities:

"I find it's the responsibility I find the hardest, such as I'm living on my own now, it's just hard and the teachers, they don't care if you're in class or not ...it's just hard to always make sure that you're there and you're paying attention...that's what I find the hardest."

Importance of challenge:

Difficulty is reframed as challenging which denotes positive self-talk. I equate these statements to the self-efficacy statements defined by Bandura (1982) as mentioned in this study's literature review. The Anglophone subjects in their interviews repeatedly mention the words 'challenge' and 'interesting' juxtaposed with the difficulty when reading in French.

" It's very interesting, yet it is a lot more challenging, than just reading English it's that's what makes it very interesting."

"...new responsibility is a challenge, the courses are a challenge ...French it's not bad, Chemistry is more of a challenge..."

"I took a year off, I was so bored, I needed a challenge...how to find a job...."

2. Motivation

The students' goals and motivation are embedded in their previous social conditioning and their search for a productive role in society.

"Je suis venu a la Faculte pour devenir professeur, il y a beacoup d'emploi pour les professeurs qui sont bilingues alors pour ca je voudrais ameliorer le francais."

"The one goal that I had was to be bilingual, trying to decide what I wanted to do..I would see myself talking both languages...something of magic about the French language, not now when I'm studying it's hard but it's a whole other new world, and also for employment.. It's motivated me to do something I want, I don't know

what I want to do in the future, I know that I would like to make a difference like in the sense be able to get into something and be able to work towards it, being able to have something meaningful, working towards that."

3. Functions of language:instrumental and integrative

French is seen as important for: 1) communication purposes, 2) employment, 3) personal enrichment and challenge and for 4) travelling. The advantages of being bilingual are perceived as being both integrative, i.e. ability to integrate into the Francophone community, and instrumental, i.e. overcome employment barriers. (Gardner and Smythe,1974)

The following excerpts are examples of why the anglophone students are presently studying in French.

"...j'aime ca que je peux comprendre les personnes qui parlent francais et si je veux, je peux aller n'importe ou, et si je comprends le francais je peux avoir du bon travail, en francais comme a l'areoport a 'Edmonton International', je pense que je peux avoir un bon travail si je sais le francais..."

"..I find that when I walk around in public places when people talk in French I can understand them I can get a better job if I can speak French I'm sure there's lots of jobs available that need people who are bilingual, for example teaching I'm sure there's a lot of jobs in teaching there's not an abundance of French speaking teachers I'm told....I just think it's better to know two languages."

"..Hopefully I'm gonna be a journalist so I thought being bilingual would be a real big help in Canada especially but if I can't do that... like I'm going to

continue taking French courses but I probably won't ever be actually bilingual, you know...

"... It just makes you a lot more flexible...."

"....I have so many goals, mainly it's to finish my education and get high marks, and get a good job and impress my father ahaha because he said all along that I'll be able to if I work hard enough, I want it too because I want to have a stable life after I finish school...."

4. Stress

The scores collected from Spielberger's Anxiety Inventory indicated a variability in the levels of stress while the interviews with the students reveal more specifically certain areas of stress. As with other students new responsibilities and adaptation to university standards are mentioned as stressful. Additionally, anglophone students express the difficulties inherent in studying in their second language. The area of stress appears to cluster around the following themes; new responsibility, studying in French, translating, language interference, factors of time, attention and concentration, reading in a second language. Below are examples representative of those themes from the interviews to illustrate the students' expressed perceptions of their experience of stress which varied in severity. For some it seemed sometimes intolerable and they thought of quitting.

New responsibility is experienced as stressful.

"....I find actually it's not the courses that are the hardest, I find it's the responsibility I find the hardest, such as I'm living on my own now, it's just hard and the teachers, they don't care if you're in class or not...."

Studying in French:

"...the disadvantage of studying in French of course it's a lot harder...you have to be very devoted..it's quite it's really demanding on your time."

"..perhaps the only reason for me that I find school stressful (the French aspect) is that marks are at stake; if I was not being graded as such, it would be more enjoyable."

"...so I'll be able to still be a journalist without the bilingualism but it would have been a help but that's just right now I've got so much stress that I don't want to continue in French I want to be able to enjoy it a bit not feel like that I'm just getting through..."

Translating experience:

The same student mentioned difficulty in translating and language interference.

...translating like I sort of problems 'cause it's word for word I get confused but I like knowing two languages... see I can think in French and know what they are saying but translating it in English is so hard I find it really hard... you know what they are saying but it's hard to put it into English after...."

Language interference:

"I've sort like I've been having problems differentiating the two...like language speaking-wise I sort of get mixed up now and I translate word for word so that in neither language it doesn't make sense anymore...it's hard to go from English back to French and back to English again."

Time, attention, concentration factors:

"The stress question is very important but I find that the attention factor is also very important. When I am in English class, I really don't have to pay that much attention to actually realize what is going on. When I'm in a French class, I find that I really have to concentrate much harder in paying attention which also tires a person out which leads to stress."

5. Reading experience in a second language

"...Reading in French I take more time 'cause it's I usually have to read things twice to fully understand it whereas English I can just read it through in one reading and pretty much understand it... the two languages are totally different you have to adjust when you study..."

"Je suis tres interesse dans la psychologie mais je ne comprends pas le sens. J'essaye de comprendre, je suis frustree parce que je ne comprends ...chaque mot je dois regarder dans le dictionnaire et apres je regarde dans le dictionnaire je ne me souviens pas ce que j'ai lis, Dr. X dit de lire mais je ne peux pas lire la premiere fois et relire c'est long... en francais je dois lire tout et c'est trop. Je peux 'vois' le mot, et le concept en anglais en juste regarder mais en francais je dois lire 'the sentence' 4, 5 fois, 10 minutes pour une phrase et apres ca je realise ce n'est pas important, c'etait un 'filler'...!!!."

DISCUSSION

The interviews with these anglophone subjects would sometimes start in French but we would switch to English quickly as it was more comfortable and easier to communicate. The intentional structure of the interview was to allow the student language and topic preference so as to observe language dominance through the use of both languages. As interviewer my

perception of the student's ability and comfort would often lead me to initiate the switch to English. The summary of the conclusions are as follows:

These students express high motivation to reach specific goals. Canada's bilingual policy has greatly influenced the thinking of young Canadians and the eventual possibilities of employment opportunities. (Carey,1986) As Gardener and Smyth's (1974) study indicates, motivation for second language acquisition can be defined as instrumental and integrative. A second language is seen as important for communication, employment, personal enrichment and travelling.

The stressors related to the non-dominant language factor are expressed in terms of not being able to express oneself as well as in English and in terms of time, effort, difficulty to concentrate and frustration when reading in a second language. There is also stress when translating from one language to the other and for one of the five students language interference created problems when speaking with unilinguals.

One student out of the twenty-one chose to leave the French program after the first semester after realizing she would not be able to succeed as well as

anticipated. Another one is undecided; she is considering studying at the Main Campus next year. Two others expressed the need to take courses in English to make sure they do not lose their English reading and writing skills.

Francophone category

Socio-linguistic Profile:

After reading all fifteen interviews I chose five interview protocols representative of the fifteen students who identified themselves as Francophones. I chose the protocols that typified the general comments made by the other ten students.

One or both parents of these subjects are from French linguistic background but English is spoken in the home since there is little opportunity or practical reason to speak French. These students express their linguistic situation this way: "..my parents speak French but we (the children) speak English at home..I speak French to my grandparents only.." There is exogamy within the family structure "..some of them are married with English-speaking husbands or wives so they tend to speak more English..."and English is the language of communication,i.e. "...but even when we get together I think English is mostly spoken in our

house." The educational background varies here also: from full immersion (three students), to partial immersion (one) and one student attended a private French high school in Saskatchewan. Three students are from small towns and two students from the city.

1. Identity

As with the preceding group the subjects in this group perceived themselves as students and all that implies.

Student context

One student expressed his intention to concentrate on his studies, choosing not to work. "..je veux concentrer plus ou moins sur les etudes parce que je trouve si je travaille je tends a laisser mes etudes a cote.." As with the other group their primary focus is studying.

Other students need to work to support themselves.

"..I have been lifegarding for a year and a half..it's something I enjoy doing..."

Social Needs

However these students also expressed their need to socialize via sports, movies etc.

"I find that sports for me is very important it keeps my mind active, my body active, keeps me in shape and I feel good and people around me are really nice so it's a good way to communicate, make friends..."

Language a rebellion issue

This theme was not found in the preceding Anglophone group. Four students out of the five said that when they were growing up conflicts with their parents centered around which language to use. One student whose mother is Anglophone and father is Francophone, expressed her personal experience this way:

"I admit that it may be just a personal bias I have and its probably not scientifically provable but that's just my personal experience, the way it's been with me... I guess I don't know I'm probably prejudiced a bit because of my family situation...we still don't get along very well anyhow I don't know because of that I guess I'm sort of because he's French and she's English like French is bad and English is good in a way and it's sort of a subconscious thing that I've kind of grown into so I've always kind of rebelled against everything my dad like Catholic and French and everything, so it's kind of strange but I think that's true I've all these funny little theories..."

.." It seems when I was smaller, I spoke more English, I don't know could have been my attitude because my parents always told me to speak French and I just like a rebellion type of kid... ahahah... go against your parents' wishes and I just spoke more English...It seems like now that I know French is more important for me I speak more French with my parents... with my brothers and sisters I speak mostly English but sometimes they speak French...I'd say the percentage would be 60% more English.."

Language a political issue

Four of the five subjects shared their feelings on the French-English language issue with themes such as racism, tolerance, understanding of others and not wanting to feel in the middle and having to choose between Anglophone friends and Francophone friends. One student shared how the French political controversy affected a friendship relationship:

"..on etait des bonnes amies et moi je suis comme ma mere elle est anglaise alors je suis un peu pour l'immersion comme je suis Francophone par la charte, mais je me considere plus Immersion et on a de grands debats ...il y avait une fois dans la classe de religion, X et moi toutes les deux ont pleuraient.... j'ai appris beaucoup a propos de comment les gens se comportent dans une situation de controverse et j'sais pas vraiment, j'pense que j'ai grandi dans l'experience mais j'ai pas vraiment aimer ca...."

"...Last year it was a lot easier before the whole thing happened with the sit in and everything 'cause everybody was more or less we just... we never thought about it, we never thought that some of us were Anglophone and that some of us were Francophone, it just never mattered..... and then afterwards it ended up that... I really thought it was unfair because a lot of people... they'd ask you before they'd say something to you, well are you Francophone, or are you Anglophone, and then you'd kind of think well is it wrong to be Francophone, or is it wrong to be Anglophone, like I have friends who they've never spoken French til grade 7, and I've always spoken... like they think we should be together and we could have a good time and we could talk, it caused a lot of problems for graduating class 'cause at the beginning of the year we were all very close and then there was like just a big rift where people had to choose sides and people would get stuck in the middle."

2. Motivation

As with the preceding Anglophone group the Francophone students chose to study in French because of economic advantages, as well as for personal enrichment and communication with more people.

"...I did the immersion program it's part of my background, and I live close to here too so... greater career opportunities especially in Canada it can help you learn more, like in biology by knowing another language you have a lot of the roots, you get to know what the word means."

"I see a big benefit as far as getting a job is concerned from what I understand there is a demand for French immersion teachers locally therefore the chance of a job is good it would be something to motivate me to do well in school. It's for personal reasons, to benefit myself and to get a job."

Another reason stated by three students is the realization that they do not know the French language and they need to learn and study French grammar to become better at it. These students realize that their competence in French is superficial and/or partial due to strong assimilation conditions in Alberta. This concurs with findings from a survey done in 1976 on the ethnolinguistic vitality of Francophones, outside Quebec (Carey,1976,1989;McEwan,1984).

.."Il me semble que ce serait 'le mieux' pour continuer dans ma carriere et pour etre, je sais qu'en apprenant le francais ici, ca va m'aider de m'ameliorer 'avec' comme communication en francais."

..."j'ai venu ici pour ma langue pour mieux comprendre juste avoir un avantage sur les autres comment parler et ecrire en francais..."

3. Functions of language

The motivations to become bilingual are the same as for the preceding group, employment, greater flexibility in thinking, travelling and communicating with more people as illustrated by the following excerpts from the interviews. With the advantages are mentioned some drawbacks of bilingualism. Juxtaposed with the idea of greater flexibility is the perception of subtractivity/semilingualism, that is the realization of lack of competence in French and/or in English. Students realistically comment on the difficulty of becoming perfectly bilingual as well as noting that language usage and comprehension is topic and situation dependent.

"...if you learn another language you gain new perspective and you learn more ways to think, it's really groovy.... Often I find that,.. like I can talk in French about something and be really able to express myself very clearly in French but not in English and somethings better in English and others in French so you can never have exact, perfect bilingualism... If you could that would be great but you never can so if you go to school in French and you learn things in French and read everything in French then your vocabulary in English goes down and you can't compete as well with people who know English better and stuff, so that's a disadvantage."

"I find that communicating with two different kinds of dialects.. I can speak and write good enough in both

languages so I can actually communicate with two different people and everywhere I go seems like French or English is used... say you go to Europe or Asia... Employment to do with people, education, public services..."

"I don't 'perfectionate' in one language.. I'm either not too bad in one, and not too good in the other....I can speak French but I can't write it as good as I'd like to...."

4. Stress

The stressors already mentioned in the preceding themes under identity and functions of language can be summarized as the realization of the difficulties inherent in mastering two languages instead of one. This is consistent with the findings of studies done in Northern Alberta in 1976 (Silla, 1974; McEwan,1984; Carey,1987) where subjects indicated their language difficulties as "un sentiment de gene dans l'emploi de la langue francaise a cause du niveau de connaissance de cette langue."(Carey,1987) Language when growing up is perceived early as a possible area of conflict between children and parents and then between friends. The political issues only intensify the feelings of being in the middle.

"...hopefully it won't take too long 'cause it puts a lot of stress on the relationship between English and French."

Studying in French

Even though these students see that Anglophone students have difficulties in French they realize that they have the same difficulties. In fact some students even wonder if it is not more difficult since their experience is a subtractive language experience versus the language additivity experience of the Anglophone group. This concurs with findings from results obtained from studies done with upper-middle class Anglophone students of immersion programs when compared with Francophone minority students (Lambert,1974; Landry,1987;Carey,1987).

"Half my class can write better than I can, more than that and they're mostly Anglophones seems that they pick up the grammar lot easier than I could so..."

"Sometimes using a French word in English, sometimes things can be confusing in spelling, two t's or one t in one of the language, the way grammar is structured it's very different, you have exceptions in French verbs and English verbs, but that's minor there are more advantages than disadvantages."

Speaking experience

One francocophone (outside Quebec) student expressed it this way: "Parler francais aux Quebecois plus stressant que parler francais aux Anglais." Stress experienced depends on who one speaks to; in this case the student finds speaking with a Quebecois more stressful..

5. Reading experience

From the Seminar on stress, four of the five students indicated they experienced more stress when reading in French but also in English when the reading is long and contains technical specialized terms.

"..le francais, un degre minimal plus grand..."
slightly more stress when reading in French.

"..la lecture technique ou scientifique en francais surtout, mais en anglais aussi quand le vocabulaire est tres specialise.."

DISCUSSION

Four of the five students preferred beginning the interview in French. In this group I found more variability of proficiency in speaking the French language. For two of the five students, fluency in English was better than their fluency in French; for two others fluency was comparable while for one student fluency was better in French due to more French at home and schooling at a private French Saskatchewan school. The theme that stands out for the Francophone students is their perception of being in the middle and of not knowing either languages as well as they would like. The issues of subtractivity and semilingualism are reflected in the Francophones' interviews. This is also mentioned as one of their motivations for studying in French. As with the Anglophone group knowing two

languages is perceived as advantageous even if difficult and therefore worth the greater effort and time invested in learning both languages.

Ouebecois Category

The socio-linguistic profile

Seven students out of the forty-three identified themselves as originally from Quebec although four of them have lived and studied in Alberta for five to seven years. Three subjects studied in Quebec colleges which is the case for eighteen other Quebec students admitted in the French Program in September 1988 (Appendix 2). Four subjects completed their grade 12 in Alberta. Four subjects are older having been in the work force for several years and are now returning to post-secondary studies for better employment and career opportunities. The individuals in this group talked for a longer period of time, were fluent in French and expressed their many ideas and views in an assertive way.

The language spoken at home is French even for the student who stated that she is now dominant in English. There is a sense that the first and dominant language is French and will never be forgotten as expressed by one student:

"..French is my first language...many people are afraid about losing....because they don't possess their French in the way I possess mine, I could speak only English for years I'm not afraid, I won't lose any single word of my French, it's like riding a bicycle you may not ride it for years, you got a hard time at the beginning but after a couple of minutes I was o.k."

There is a strong appreciation for the French language, expressing the desire to keep and continually improve French while realizing their inadequate proficiency in the English language. The subjects in this group feel the need to improve their linguistic skills in English since this lack is an obstacle to further studies in English. For them the choice lies between learning English or moving to a French university after their degree to continue in law or psychology for example. Quotations will illustrate these points under functions of language and stress.

1. Identity

One student expressed cultural traits common to all Quebecois, describing them as more active than the Francocophone minority population, more self-assertive, "fighters", complainers, boisterous even loud, noisy, more independent of rules, and having a special "cuisine".

"..etant plutot minoritaire j'veux dire tu t'affirmes moins, t'ecoutes plus...Quebecois c'est un peu comme des Francais t'sais j'veux dire des Europeens c'arrive partout ils sont chez eux partout....c'est un caractere.

culturel...la population Francophone d'habitude est plus bruyante "loud" que generalement la population anglaise."

Even while maintaining these cultural traits the same student appreciates Alberta and wants to live in this province chosen for specific reasons: slower pace, more space, better work opportunities.

"I want to be here... I prefer the life style of the people here, it's slowed down, Quebec, o.k. it's more fun, loud and whatever, I like it too but after awhile you know I just feel like slow down and just enjoy life, calm down, I like both ways but I prefer the speed of the people here."

The political issue of language is perceived differently; 1) for one student to fight for French in Alberta is considered a fanatical position, 2) for another it is considered a right worth fighting for, 3) for another it is the parents' and the individual's responsibility to make sure that their linguistic needs are met depending on their situations. The need to know both languages is a recurring theme and is perceived as an advantage.

"... je trouve que c'est un tres grand avantage de pouvoir maitriser deux langues..."

Social needs

The Quebec students acknowledge their need to learn English to communicate with friends and all of

them speak English where social situations demand it, describing their experience as 1) challenging and even fun 2) as distressing wondering what the others are saying 3) as difficult because of feeling blocked, and perhaps more importantly not able to find words to express their thoughts.

1) "...be with everybody and like it is in my room, my roommate is a French guy from Sask. and he's almost as good in French as he is in English so I could say close to the utopic dream, and his girlfriend is about the same. So when there's somebody who's coming in the room we'll speak French, English or whatever... one of my friend speaks Japanese, the other Chinese and my roommate enjoy to throw some words about in Russian too so it's a real big mix-up in the room but I like it, it's fun."

2) "...when I moved here, not bad experiences, but feel so shy and uncomfortable because when I moved I couldn't speak, Yes, No, I would like to have, just like that, no more 'English knowing'. When some people talk in English, I thought the people talk about me because I didn't understand. It is very important to understand and speak both languages.....je me sentais meme pas chez nous c'est les sentiments que j'avais... probablement pour les anglais c'est la meme chose au Quebec, ils ne se sentent pas chez eux puis ils sont dans leurs pays eux autres aussi. C'est le desagrement que j'ai senti quand je suis arrive ici...ca n'a pas ete facile la premiere annee."

3) "...it's like 'if' I have a wall in front of me when I have to speak, when I'm only with one person that's not too bad but with a group I can't speak, I don't find my words, I feel very, very bad I'm not natural, I can't express myself the way I am. And I feel very bad."

2. Motivation

As with the subjects in the other two groups, the Quebec students see mostly the benefits of bilingualism, i.e. employment, communication, personal enrichment. The majority expressed the need to learn English "je voulais apprendre l'anglais.." since that is perceived as their non-dominant language.

"Probablement que je vais garder les deux langues, je veux essayer de les utiliser le plus possible. Si je deviens avocate, comme que je veux faire et bien je veux essayer de les pratiquer tous les deux....."

"Je ne regretterai jamais d'avoir venu ici puis d'avoir appris l'anglais".

"On devrait essayer de s'adapter j'dis pas de changer ta culture, de changer ci de changer ca pour etre integrer, j'veux dire tu peux t'integrer sans perdre qu'est-ce que t'as".

3. Functions of language

Language is perceived as serving integrative and instrumental purposes for this group also.

"I decided to go to an English school, to just perfect my English, and so I went to Salisbury Composite for my grade 11 and grade 12. I decided I didn't want to be at the bottom of the company for the rest of my life so I've come back to Alberta to finish my grade 12 and that took two years and then that's when I decided to make plans for myself and to become a teacher."

4. Stress

One student expressed the differences in age with the other students as stressful but she chose to study for employment opportunities and in a French

program because "I'm more comfortable in French it's easier for me too.."

The stressors mentioned by the subjects in this group are also language related: interference between the two languages when in Alberta for five years, the political issues surrounding language, and studying and reading in English.

Language-interference

For one student there was anger expressed when unable to find a French word: "puis desfois j'vais penser un mot en francais, j'veux dire quelquechose, il me vient en anglais puis la ca me fache parce que j'me dis j'suis francaise pourquoi ca sa m'arrive..."

Political Issue

One student expressed his personal position on the language issue as not his "war". This student is not interested in dividing people into French speaking versus English speaking:

"J'aime le francais, mais depenser ma vie a me battre pour l'evolution du francais c'est a dire prendre une position d'un cote ou de l'autre, c'est une guerre qui ne m'interresse pas, moi quand j'parles a un Anglophone j'parles en anglais quand j'parles a un Francophone j'parles en francais."

Studying in English

"I don't consider my English as good enough actually to go and study out at the Main Campus, and you know

constant study in English like essays and stuff like that, for me it's way harder for me you know to do that but this is my goal, I don't know if I'll be able to, but I'd really like to switch at the Main Campus.."

"I find out like it was a lot harder on me in English to remember things, or to express myself like on paper and verbally also and I found it really difficult."

5. Reading in English

Six Quebecois students out of the seven described their reading experience in English as more stressful than in French. "c'est plus facile pour moi toujours en francais quoique je suis capable de me debrouiller en anglais aussi, il y a des mots que je ne suis pas capable de comprendre". Lack of English vocabulary and the practice-time needed in English are stated as areas of difficulty.

DISCUSSION

The same feelings of frustration when reading in one's non-dominant language are described by the Quebec group. This group is different from the other two groups in that their non-dominant language for the most part is English. However their motivations to learn a second language are the same as the two preceding groups, the anglophone and the francophone subjects, that is, better job opportunities, communication, personal enrichment and travelling.

SUMMARY TABLE OF CONCLUSIONS

Group	language dominance (self-perception)	Themes: Similarities/Differences
1. Anglophone	English	Motivation: integrative and instrumental. Stressors are identified as time, effort needed to read in French while competing to achieve.
2. Francophone	Varies	Motivation: integrative and instrumental. Stressors are identified as not feeling competent in either language, feeling in the middle on English/French language issues.
3. Quebecois	French	Motivation: integrative and instrumental. Stressors are identical to Anglophone group except it's toward the English language.

Chapter 6

DISCUSSION

The preceding chapters have outlined the research questions, the null hypotheses, some aspects of bilingual and reading comprehension literature, the methodologies used to uncover answers, as well as the results obtained. This chapter will discuss those results, and suggest implications and recommendations.

Research question #1

Through statistical analysis, the researcher was able to demonstrate differences in reading comprehension scores. It was found that there was significant difference among the three socio-linguistic groups on English reading comprehension scores but not on French reading comprehension scores. Edwards & al (1984) note that "on some measures in the case of advanced students, (second language performance in immersion programs) approaches that of native speakers of the target language."(p.270) Hypotheses 1.1 and 1.2 concur with Carey's (1987), Durand's (1976) and Whittle's (1986) results: "Overall, Francophones performed with similar comprehension in both languages, whereas, Anglophones performed significantly higher in

English than French with their French ability similar to the Francophones' French ability" (Whittle,p.25).

The Ouebecois group had significantly lower scores in English reading comprehension scores than the Anglophone group (Hypotheses 1.2). The means for the Anglophone and the Francophone groups are comparable. The Ouebecois students have no English immersion education in their background. In the case of the Francophone group both languages are mastered at the same level. This concurs with previous research indicating that some students are able to learn a second language and gain high academic achievement (Epstein,1977;Goodman,1979;Edwards & al,1984;Whittle, 1986;Carey, 1987). The weighted means for the class (French mean is 17.06 while the English mean is 18.02) indicate higher English scores.

The French and English reading comprehension scores for Francophones concur with Whittle's (1986) and Carey's (1987) results at the senior high school level. "Thus Francophones could read in either the French or English language at the university and not be penalized; however, the Anglophones could not perform as well in French as in English at the university."

The within-subject analysis provides further evidence for the comparitive relationship between languages.

In the within-subject analysis the high correlation (.78) indicate that students who scored high in their dominant language also scored high in their non-dominant language perhaps indicating the importance of a strong first language mastery and/or prior knowledge as suggested by Carey (1987) and Lambert's (1974) additivity-subtractivity concept. The lower scores in the non-dominant language might present a question of loss of concept comprehension when studying in a non-dominant language as compared to studying in a dominant language. Both Whittle's (1986) and Carey's (1987) conclusions are confirmed by the similar results of this study. However Edwards' et al (1984) "sheltered study", which included extra supervision and study sessions with language specialists, showed that students "succeeded in learning the subject-matter at least as well as those students following regular sections of the psychology course."(p.280) Anglophones would achieve maximum performance when they chose to study in English or as Edwards' study indicates when exposed to "sheltered subject-matter teaching", while the Quebecois would

achieve better when studying in French or similarly when exposed to "sheltered teaching". Francophones would perform equally in both French and English and are not necessarily linguistically deficient in either language as implied by Lambert (1974) and Landry's (1987) theory of additivity/ subtractivity for minority Francophones in English majority environments.

Research question #2

It was found that there was a significant difference in the French Reading time but not in the English Reading time when comparing across the three groups. However both the Francophone and the Quebecois took significantly less time than the Anglophones when reading the French texts. Moreover, the limitation on reading comprehension of this material is not how rapidly one can make eye movements but how rapidly one can comprehend the meaning of the text.

The Anglophones' French reading time differs significantly. The Anglophone means (table 7 and 8) indicate their time to be 10 minutes more on a French text than on an English text. It is unlikely that the minimal difference in text length could account for a significant portion of this difference. The Francophone means show they read English passages on

average 2 minutes faster than French passages. The Quebecois' mean indicate they read French passages 1 minute faster than English passages. The weighted means for French time and English time indicate that this class took longer by 5.413 minutes in the French language than in the English language. The weighted mean in French is 19.853 and in English it is 14.440. As previously discussed the time factor was not addressed in Edwards "Second-language acquisition through subjects-matter learning". However Genesee (1989) speculated that some immersion students could be working twice as hard and for a longer time in their non-dominant language to obtain the same or lower results than in their dominant language.

In the within-subjects' analysis in the present research, the results showed longer time expenditure when reading and studying in a non-dominant language as well as lower comprehension scores. This concurs with Crawford's (1986) findings that indicated significantly longer French than English lexical access latencies in both immersion and extended French subjects. The high correlation (.601) between the reading times in the dominant and non-dominant languages from the within-subjects analysis indicates

a similar pattern of results as the reading scores. When subjects' reading time was high in the dominant language it also tended to be high in the non-dominant language.

Research question #3

No significant difference was found between the three groups on the measure of anxiety. The differences in the variability between the socio-linguistic groups suggests no correspondance with anxiety as measured by Spielberger's State and Trait Anxiety Inventory. These results confirm Bergeron's (1976) conclusion that the psycholinguistic factor of bilinguality has the same influence on anxiety scores as the educational level factor that is first year university students are capable of semantic differentiation. "The influence of this psycho-linguistic factor on the relatively lower scores of bilingual subjects, in response to materials written in their mother tongue rather than in their second language, could be similar to the influence of educational level."(p.170) In this case both factors would influence how first year university students, respond to questions on an anxiety inventory. These first year students were tested in their first semester

of university and as some studies ( ) show stress is cumulative and its symptoms would not be apparent until later.

Research question #4

It was found through interview data that students from all three groups experience stress when studying in their non-dominant language, confirming previous research such as Selye, Mandler, and Goldberg (1982) who state that effort can be considered an added stressor. However Berlyne's (1965) and Carey's (1968) research have shown that anxiety and arousal vary depending on such variables as personality types. Nevertheless Horwitz (1986) and Smith (1978) showed the importance of stress management in successful language learning and reading. Krashen (1984) in the "sheltered study" indicates factors that "may have helped to increase students' self-confidence and to lower anxiety...". (p.281)

The stressors identified specifically for each socio-linguistic group are:

for the Anglophone subjects; time and effort needed when reading in ones' non-dominant language, language interference, unknown vocabulary, and being tested in ones' non-dominant language,

for the Francophone subjects; ambivalence and difficulty in establishing a dominant language, allegiance to both French and English language groups, realizing their lack of proficiency in French, and language interference in both languages,
for the Quebecois group; feeling of inferiority in Anglophone social situations because of their lack of proficiency in the English language.

Research question #5

Motivation and attitudes are difficult variables to measure but they seem to be important elements in the students' persistence in reading and coping with stress when studying in their non-dominant language whether their background is from a majority or a minority situation. (Miller, 1983; Edwards et al,1984) The students' motivation can be classified as both integrative and instrumental as described by Gardner and Smythe (1974). Employment, the instrumental category, is a major motivator for students of all three groups choosing to study in French. The benefits of bilingualism are perceived in terms of personal enrichment, challenge, communication with more people, travelling and future employment.

RECOMMENDATIONS

Researchers such as Genesee (1979) Carey, (1987) Cummins,(1984) Fillmore (1987) and Malicky (1988) have shown the relationship between reading comprehension and language proficiency. As noted by Genesee (1979) there are common processes underlying reading across languages. There are indications however that for reading comprehension more than surface-level cognitive processes such as decoding need to be transfered (Carpenter,1987; Chastain,1988). Context, vocabulary, semantic and syntactic clues as well as prior knowledge are essential elements for complete reading comprehension (Carey,1984,1987;Malicky, 1988).

In the process of evaluating bilingual subjects on reading comprehension, stress, and motivation the researcher recognized the complexity of the questions under study. Educational and literacy concerns abound for second language students, for exchange students, and for first and second generation immigrants. The investigator recommends the following based on previous bilingual research, the researcher's own experience and reflections on the quantitative/ qualitative method of this study:

Recommendations for Teacher Training Programs

Salerno (1989) recognizes the importance of teaching metacognitive strategies for greater linguistic awareness necessary in language acquisition which has as its ultimate goal: COMMUNICATION. Reading is one form of communication embedded in linguistic phenomenon that has socio-psychological conventions that influence the giving and receiving of messages.

"Apprendre une langue pour mieux communiquer, c'est le but qu'implicitement ou explicitement se fixe tout apprenant. Enseigner une langue pour faciliter la communication, c'est le but que devrait explicitement se fixer tout enseignant." (Salerno,p.26)

In Canada, the bilingual and multicultural government and educational policies have the potential for promoting more communication and less prejudice. However educators need to be aware of dangers that do exactly the opposite: for example, demanding a "standard" French or English without acknowledging the place of non-standard communicative functions of language (Singh,1986;Carey,1989). Teaching, in itself, is embedded in a socio-political-cultural psychological context and even more so the teaching of a language (Salerno,1989).

Teaching linguistics with the object of building bridges and demythifying ethno-linguistic

differences would gradually expand students' awareness of the relativity of factors that can be sources of psychological blocks in the learning process. Salerno suggests analysis of mistakes, of communication processes, of the differences between oral and written language, and of stages in the acquisition of language.

The researcher recommends teacher-training in second-language education to enhance interventions that would meet the needs of all socio-linguistic groups (Obadia, 1984;Pawley,1985;Tardif,1984). Teachers need to be aware of reading strategies, the complex issue of evaluation and testing, (Carey, 1980) the stress factor in second language learning,(Carey,1968) and the components (minority/majority) of the socio-political context of students. Courses in Social Psychology which address prejudice and stereotypes, affirmative action and language legislation would help increase awareness of students' needs. Measuring and testing in the context of bilingual education is a complex issue encompassing sociological, cultural, linguistic, and psychological factors (Cummins, 1988). Ignorance of the impact of these factors on performance would lead to false assumptions and evaluations. Consequently decisions can be based on incomplete data. Knowledge of

test construction and of psychological and linguistic variables would be a basis for constructive educational interventions in the language acquisition processes (Pellerin & Hammerly; 1986).

Recommendations for Counsellors

The researcher recommends that issues of bias, prejudice, racism, and compassion for diverse world-views be addressed in the context of bilingualism. Knowledge of stress management (Bandura & Morris,1981) and study skills are important aspects when dealing with students studying in a second language, whatever their socio-cultural-economic background (Martel,1984; Martinez,1981). Bandura's theory of self-efficacy, and Gardner & Smythe's(1974) findings concerning motivation in second-language learning can help counsellors understand students' psychological world-views.

Counsellors need to understand the context of bilingualism so as to promote constructive approaches in language, educational and vocational development of students (Rios & Hansen,1978). Demonstrating generality and normalizing difficulties in second language learning by reframing the process as challenging without minimizing the cost in time and effort can lead to reduction of stress. Listing advantages

and comparing them to the trade-off between lexical availability and automaticity would increase awareness of language processes (Bialystok,1988) in the perspective of personal enrichment with the potential of enhanced real communication possibilities (Salerno, 1989). Moreover, an understanding of cognitive processes may aid students who are reading in a non-dominant language.

The counsellor needs to be aware of IDENTITY issues closely connected in the situation of coming in contact with a different language and culture (Halsted, 1981;Gumperz,1982;Edwards,1985). Bienvenue & Goldstein (1985) and Zarate (1986) show how contact with another culture leads to a redefinition of one's maternal identity: "la classe de langue invite a une prise de conscience des mecanismes de l'identite: dans la confrontation avec l'autre, c'est une definition de soi qui se construit "(Salerno, p.36).

When counselling minority groups, the GUILT issue linked to situations of language loss can surface for certain students. Language loyalty becomes an issue for individuals where language maintenance is a matter of their self identity (Carey,1989).

The quantitative and qualitative analysis of the data in this study hopefully increases awareness of the factors in play and the importance of considering social, linguistic, and psychological aspects in evaluation and assessment procedures (Curran,1980). Perception of differences is a complex and biased process that needs to be confronted with other perceptions, more objective quantitative data, as well as with more subjective qualitative data (Johnson,1987).

The function and role of educators and counsellors can be perceived as finding ways to enhance the learner's freedom of choice, in this case the flexible ability to communicate at different levels, and to be comfortable in a cultural milieu without being its prisoner (Carey, 1989;Salerno,1988). Awareness and acknowledgement of other cultures would lead Anglophones, Francophones, and Quebecois to appreciate their own linguistic heritage and their common cultural bond whether they choose to develop one language or be in the process of becoming "bilingual" or "multilingual" persons.

FUTURE RESEARCH

The researcher recommends quantitative and qualitative research in areas of: 1) Reading Strategies 2) Test Construction Analysis 3) Evaluation of Stress Management Workshops and 4) Study Skills Training.

Reading Strategies

The researcher recommends comparative treatment studies to test reading strategies such as SQLRT-Survol-Question-Lecture-Rappel-Test (Thomas & Robinson,1982;Spache & Berg,1978).

Students involved in this study have expressed the need to have group discussions in their second language (sheltered-teaching) as an aid to grasping concepts encountered in their reading. The researcher recommends testing procedures of group discussions to better understand the link between oral and written language in the process of language acquisition.

Test construction analysis

Translation of text and tests remains an issue in the assessment of bilingual students (Hulin, 1987; Prince & Mombour,1966). The linguistic element confounds the comprehension element as shown in this study. Test item analysis as well as analysis of confounding translation factors could improve evaluation procedures of reading comprehension (Hayes, 1982;Beardsmore,1982;Cummins,1984).

Stress management workshops

Students have indicated their appreciation of group discussions in that it helped normalize their experience and give them other coping strategies. The researcher recommends comparative treatment studies.

Study skills training

University work entails efficient study skills and even more so when these studies are done in a second language. Important strategies need to be implemented by students so as to maximize their chance of success when attempting to fulfill two goals simultaneously: university education and mastery of a second-language. Research in this area would benefit educators and counsellors.

Quantitative and Qualitative Research

In the area of cross-cultural research where interdisciplinary input, i.e.psychology, linguistic, sociology and anthropology can shed light on the process of becoming bilingual, it is important to find ways of asking new and different questions in various ways (Jevne, 1988). The input of quantitative and qualitative data seems ecologically valid in bilingual education.

Recommendations for second language learners

Edwards' (1984) study done under "sheltered" conditions that is, adapted teaching to the individual needs of students, showed higher probability of successful achievement for university students studying psychology in a second language. The researcher recommends "sheltered" teaching conditions in the university setting because of the students' diverse previous educational background and variable levels of proficiency in first and second languages in first year students.

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APPENDIX 1.

Highest Level of Education Reached for Adult Population* of Canada, by Mother Tongue, 1971 and 1981

Educational Level	1971 Population			1981 Population		
	English	French	Other	English	French	Other
Less than Grade 9	27%	50%	54%	15%	30%	37%
Bachelor's Degree or Higher	5.4%	3.5%	4.0%	9.1%	6.1%	8.4%
Total Adult Population of Canada (in thousands)	7,543	3,523	2,102	9,611	4,279	2,548

*Over 15 years of age and not at school full time.

Source: Statistics Canada, *School Attendance and Level of Schooling, 1981 Census of Canada*, Table 10 (and corresponding document for 1971).

TABLE 2

Level of Education for the Population 15+, by Language Used in the Home, 1981*

Region	Percent with Less than Grade 9		Percent With Some University Education**	
	English	French	English	French
Newfoundland	31	24	12	15
Prince Edward Island	22	46	16	12
Nova Scotia	20	35	16	13
New Brunswick	23	37	15	11
Quebec	19	27	24	11
Ontario	16	26	17	13
Manitoba	21	27	16	14
Saskatchewan	22	29	15	15
Alberta	12	17	19	16
British Columbia	12	21	19	16

* Excludes individuals reporting home languages other than English or French.

**Note that the data in Table 1 refer to graduation from university, while the data in this table represent proportions with some university education, including graduates.

Appendix 2

French Educational Background of Students admitted to French Program of Faculte Saint-Jean in September 1988

French Program	Number of students
Langue et Litterature 30 (K-12) : (from J-H Picard, Calgary)	38
French 30 (3 years of French) :	50
French 30S (6 years of French) :	18
French 30N (9 years of French) :	10
French 31 :	2
Cegep (Quebec colleges) :	18
French 200 :	15
Miscellaneous (universities, : other countries,etc.)	21
Total	172

APPENDIX 3 (P.122-125)

SPIELBERGER'S ANXIETY INVENTORY (STAI)

This self-evaluation questionnaire was developed by Charles D. Spielberger in collaboration with R.L. Gorsuch, R.Lushene, P.R. Vagg, and G.A.Jacobs. The instrument used in the present research is STAI Form Y-1. It is published by Consulting Psychologists Press, 577 College Avenue, Palo Alto, California 94306.

The questionnaire has forty statements; twenty are to be answered in the context of general feelings, trait anxiety, while the other twenty are to be answered in the context of feelings of the specific moment, state anxiety.

Included in this appendix is the french translation ASTA of Spielberger, Gorsuch and Lushene, 1970 STAI, written by Jacques Bergeron and Michel Landry.

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1. Hunger can be a powerful motivator.
2. People who have subsisted on semi-starvation diets report that much of their thinking and dreaming concerns food and eating.
3. The body needs an adequate supply of the essential nutrients in order to function efficiently.
4. Depletion of these nutrients activates homeostatic mechanisms to release food stores in the body; for example, the liver releases stored sugar into the bloodstream.
5. Replenishment from body stores enables a person to continue functioning even after missing several meals.
6. When the body stores are diminished to a certain point, however, the automatic homeostatic mechanisms are no longer adequate, and the entire organism becomes mobilized to seek food.
7. What internal signals tell the brain that the body's supply of nutrients is low and it must find food?
8. The feelings most people describe as hunger-an empty or aching sensation in the stomach region sometimes accompanied by a feeling of weakness-give us some clues.
9. But there are other physiological signals, as we shall see.
10. External stimuli can influence feelings of hunger and eating behavior.
11. After a full meal, you may still desire the delicious dessert placed before you.
12. In this case, your cue for hunger is not internal.
13. The odor or sight of food can arouse hunger even when there is no physiological need.
14. Habits and social customs also influence eating behavior.
15. You are accustomed to eating at certain times of day and may suddenly feel hungry when you notice that it is noon.
16. You may consume more when having dinner with friends who are all eating voraciously than you would when dining alone.
17. Eating behavior is influenced by a number of physiological, environmental, and social variables.
18. We will look first at the physiological mechanisms that regulate food intake and then consider environmental and social factors when discussing some of the current research on obesity.
19. Regulation of food intake is so crucial to survival that nature has provided several homeostatic controls.
20. If one or more sensory signals asociated with eating is eliminated-smell, or taste, or sensory information coming from the stomach-the organism is still able to regulate its food intake.
21. The various control systems that regulate feeding are integrated in a region of the brain called the hypothalamus.
22. The hypothalamus, a small collection of cell nuclei located at the base of the brain has numerous connections with other brain parts and with the pituitary gland.

23. It also has a greater density of blood vessels than any other area of the brain and thus is readily influenced by the chemical state of the blood.
24. The hypothalamus plays an important role in the regulation of food intake.
25. Physicians have observed that patients with tumors or injury in the region of the hypothalamus overeat (a conditon called hyperphagia) and become obese.
26. The development of precise instruments for exploring the brain has made it possible for researchers to specify two areas that influence food intake.
27. The lateral hypothalamus (LH) initiates eating-it is a "start", or "feeding center"; the ventromedial hypothalamus (VMH) inhibits eating-it is a "stop" or "satiety center".
28. One way to study the function of a specific brain area is to stimulate the spot with a weak electric current.
29. Stimulation of LH cells causes a satiated animal to eat.
30. Stimulation of VMH cells inhibits eating; a weak current slows the animal's feeding behavior, and a stronger current will stop it entirely (Hoebel and Teitelbaum, 1962).
31. Another way to study the function of a brain area is to destroy cells in the region and observe the animal's behavior when the area no longer exerts control.
32. When cells in the LH are destroyed, the animal refuses to eat or drink and will die unless it is fed and watered artificially.
33. Damage to cells in the VMH produces overeating and obesity in every species investigated-from rat and chicken to monkey and human.
34. Studies of this sort demonstrate that the VMH area (satiety center) and the LH area (feeding center) act in opposite ways to regulate food intake.
35. Moreover, two kinds of control systems appear to be integrated in the hypothalamus.
36. One, responsive to the immediate nutritive needs of the organism, tells the brain when to start and stop a meal.
37. A second, long-term control system, maintains a stable body weight over a period of time, regardless of how much the organism may or may not eat in any one meal.
38. Investigators have identified three variables that influence hypothalamic control of immediate appetite: blood-sugar level, stomach fullness, and body temperature.
39. A low sugar or glucose level in the blood makes us feel weak and hungry.
40. Injections of insulin (which lower the blood-sugar level) increase food intake; injections of glucose (which raise the blood-sugar level) inhibit eating.
41. Studies indicate that the hypothalamus contains "glucoreceptors," cells sensitive to the rate at which glucose passes through them.
42. The glucorecptors in the VMH and the LH respond differently to glucose level.
43. For example, microelectrodes were implanted in the hypothalamus of dogs and cats to record neural activity in

the VMH and LH before and after injections of glucose or insulin.
44. After glucose injections, cells in the VMH (satiety center) became more active, whereas cells in the LH (feeding center) decreased in activity.
45. The reverse was true after insulin injections.
46. Cells monitored in other parts of the brain showed no changes (Anand and others, 1964; Oomura, 1975).
47. But digestion is a slow process; we stop eating long before the food we have consumed can be transformed into enough blood sugar to make up a deficit in the bloodstream.
48. A more immediate signal, a full stomach, lets the brain know that food is on its way.
49. If food is injected directly into the stomach of a hungry animal (without passing through the mouth and throat), it eats much less than it would otherwise.
50. If food is removed from a satiated animal's stomach (Via a tube), the animal will eat enough to compensate for the loss.
51. Experiments suggest that cells in the VMH respond to distention of the stomach to inhit further eating (Deutsch and others, 1978).
52. An empty stomach produces the periodic contractions of muscles in the stomach wall that we identify as "hunger pangs".
53. This increased movement of the stomach wall activates cells in the LH.
54. Thus, an empty stomach signals the LH to initiate eating; a full stomach signals the VMH to stop eating.
55. A third short-term control mechanism is temperature.
56. In a warm environment most animals and humans eat less than in a cold environment.
57. Cooling the brain has a similar effect on food intake.
58. The nature of these "thermoreceptors" is not clear, but evidence shows that the LH responds to decreased brain temperature and the VMH responds to increased brain temperature.
59. Thus, the LH responds to low blood-sugar level, increased motility of the stomach walls, and lowered brain temperature by initiating eating.
60. Conversely, the VMH responds to high blood-sugar level, stomach distension, and increased brain temperature by stopping eating.
61. But all of these short-term mechanisms are subject to a long-term mechanism that attempts to stabilize body weight over time.
62. Most wild animals maintain their weight at about the same level throughout their lifetime, even though food may be plentiful one week and scarce the next.
63. Human beings have greater difficulty maintaining a constant weight, because their eating behavior is more strongly influenced by emotional and social factors.
64. Even so, most people stay at about the same weight from year to year.

65. In addition to its short-term controls of food intake, the hypothalamus appears to provide a delicate system for ensuring that the organism's weight remains stable.
66. We noted that rats with damage to the VMH overeat and become obese.
67. Originally, this behavior was attributed to an increased appetite resulting from destruction of part of the short-term control system.
68. But once the rat reaches a certain level of obesity (usually two or three times its normal weight), it no longer overeats.
69. It reduces its food intake to only slightly more than normal and maintains its new obese weight.
70. If the animal's diet is restricted, it will drop to its original normal weight.
71. But once allowed to eat freely again, it will overeat as before until it is back to its obese state.
72. It appears that damage to the VMH disturbs the animal's long-term weight control system, so that weight is regulated at a higher level.
73. If obese rats are force-fed, so that they become "super-obese," they reduce their food intake until their weight returns to its "normal-obese" level.
74. Some correlate of body weight must act on the VMH to influence food intake.
75. Autopsies of animals with VMH lesions indicate that it may be the amount of free fatty acids in the bloodstream.
76. In contrast, rats with lesions in the LH refuse all food and water for some time after the operation and will die unless artificially fed.
77. Most eventually resume eating and drinking on their own, but they stabilize at a new, lower weight level, just as VMH-damaged rats stabilize at a new, obese level (Mitchel and Keesey, 1974).
78. Again, this behavior indicates impairment of a long-term weight control system rather than merely decreased appetite.
79. Rats that are starved prior to LH lesioning (until their body weight is 80 percent of normal) do not refuse to eat after the operation.
80. In fact, many overeat, but only until their weight reaches a new level-lower than their normal weight but higher than their starved, preoperational weight.
81. These findings indicate that the VMH and LH have reciprocal effects on the "set point" for body weight.
82. Damage to the VMH raises the set point.

DREAMS

1. Conscious activities may take place in different contexts from those of normal waking conditions.
2. These conditions can be described as altered states of consciousness.
3. They are distinguishable from the conditions described as divided consciousness in that they are general states producing a context for modified consciousness.
4. For example, a person drunk on alcohol may react very differently in a social situation from that same person when sober.
5. Hence, drunkenness may be conceived as a state within which conscious activities can be studied to find, for example, how judgement is affected, how emotions are aroused, and so on.
6. In this section on sleep and dreams and in the following ones on meditation, drugs, and hypnosis, the problem of altered states of consciousness is central.
7. Especially the effect that the altered context has on the conscious processes occurring within it.
8. The most familiar change of state is that between waking and sleeping.
9. Were sleep an entirely unconscious state it would not be considered an altered state of consciousness.
10. However sleep, like drunkenness, is a context in which a different kind of thinking goes on, especially as reflected in dreams.
11. Biologically, sleep is partly a restorative state.
12. However, it is more complex than that, for whatever the condition of the body, a person can choose either to sleep or to remain awake.
13. Sleep is not altogether unconscious, for upon waking, we can recall dreams.
14. It is not entirely quiescent, because some people walk in their sleep.
15. Nor is it entirely insensitive, because a mother can be awakened by the cry of her baby.
16. It is not altogether planless, because some people can decide to wake up at a given time and do so.
17. Still, sleep is the most obvious change in the conscious state; most of us experience the transitions between the two states (sleep and waking) at least twice a day.
18. Three aspects of sleep illustrate some of the problems associated with an understanding of sleep.
19. The aspects of sleep are sleep schedules (the characteristic times between periods of sleeping and periods of waking), depth of sleep, and voluntary and involuntary controls that affect sleep.
20. The newborn baby tends to alternate frequently between sleeping and waking.
21. Eventually the night-day rhythm is established.
22. The total sleeping time drops from 16 hours per day to 13 hours per day within the first six months of life.

23. Adults report an average night's sleep of seven and a half hours, but this varies greatly; some manage very well on as little as three hours per night (Jones and Oswald, 1968).
24. One elderly woman averaged only 45 minutes of sleep per night (Meddis, Pearson, and Langford, 1973).
25. Then there are "larks", who go to bed early and rise early, and "owls" who go to bed late and rise late (Webb, 1975).
26. Humans share a natural rhythm of biological processes with other mammals, a biological clock known as the circadian rhythm that closely follows the night-and-day periodicity of the world we live in.
27. In free conditions, the human cycle tends to have a natural period of 25 hours, but external events modify the natural rhythm in favor of a 24-hour period (Aschoff,1965).
28. Because of their circadian rhythms, some travelers find it hard to adapt to the new time cycles that jet travel can produce in a few hours.
29. "Jet lag" may persist for several days.
30. In one study, American students who traveled from the United States to Germany took 12 days to recover from the outward flight and 10 days to recover from the homeward flight.
31. This was indicated by a test of precision of muscular skill.
32. Apparently it is easier to return to an old cycle than to establish a new one.
33. Related experiments indicate that jet lag is due to interference with the normal rhythm rather than to loss of sleep (Webb, Agnew, and Williams, 1971).
34. Some people are readily aroused from sleep, and others, the "deep sleepers," are hard to awaken.
35. Research begun in the 1930's (Loomis, Harvey, and Hobart, 1937) has produced sophisticated techniques for measuring the depth of sleep as well as for determining when dreams are occurring (Dement and Kleitman, 1957).
36. We now know that sleep involves five stages-four stages of depth, and a fifth stage known as rapid-eye-movement (REM) sleep, in which dreams commonly occur.
37. When a person who is awake closes his or her eyes and relaxes, the brain waves characteristically show a regular pattern of 8 to 13 vibrations (Hz) per second (known as alpha waves).
38. As the individual drifts into stage 1 sleep, the brain waves become less regular and are reduced in amplitude, with little or no alpha.
39. Stage 2 is characterized by the appearance of spindles-short runs of rhythmical responses of 13 to 16 Hz, slightly higher than alpha-and occasional rises and falls in the amplitude of the EEG.
40. The still-deeper stages, 3 and 4, are characterized by slow waves (known as delta waves).

41. It becomes more and more difficult to awaken the person during these stages.
42. (However, something personal, such as a familiar name, can often arouse a person from a deep stage while a more impersonal stimulus, such as a loud sound, may not.)
43. After the person has been asleep for an hour or so, another change occurs.
44. The EEG record goes back to stage 1, but the subject does not wake up.
45. Instead, eye movements appear on the record.
46. This stage is known as REM; the others are known as non-REM (or NREM).
47. When aroused from the REM stage, the subject commonly reports a dream.
48. Even though sleep at this stage is apparently light and the person is dreaming, it is as difficult to arouse the sleeper from the REM stage as from stage 2.
49. The stages vary throughout the night, and there are great individual differences.
50. However, there is a general pattern of going through the first four stages during the inital hour of sleep before REM occurs.
51. The deeper stages (3 and 4) tend to disappear in the second half of the night as REM becomes mores prominent.
52. People suffering from insomnia have great difficulty falling asleep or remaining asleep throughout the night.
53. In a large-sample survey of adults, 6 percent of the males and 14 percent of the females reported insomnia "fairly often" or "often" (Kripke and Simons,1976).
54. However, those who report insomnia may have a false conception of how little they sleep, because they remember only the time when they were awake and have no recollection of the period of sleep.
55. One study that monitored self-professed "insomniacs" found that only about half of them were actualy awake as much as 30 minutes during the night (Carskadon, Mitler, and Dement, 1974).
56. Ordinarily we have a great deal of voluntary control in deciding when to sleep and when to stay awake.
57. Most college students can go to sleep at any time of day, provided the conditions are right and they choose to do so, whether or not they are accustomed to napping.
58. One study found that 60 percent of 430 students occasionally took naps in the daytime-some every day, some only occasionally.
59. The remaining 40 percent reported that they never napped (Evans and others, 1977).
60. Of the nappers, 22 percent napped because they enjoyed it for reasons other than the need for sleep.
61. The remaining 78 percent took naps only when they had lost sleep-either the night before, or cumulatively over several days-and needed to make up for lost sleep.
62. There are some disorders of sleep that are more severe than the familiar complaints of insomnia.

63. Narcolepsy and apnea are only two of these disorders.
64. Narcolepsy is an uncontrollable tendency to fall asleep, whether one is sitting at a desk, driving a car, or carrying on a conversation.
65. If a student falls asleep while the professor is lecturing, this is perfectly normal, but if the professor falls asleep while lecturing, that is narcolepsy.
66. In a study of 190 patients who complained that they could not stay awake in the daytime, 65 percent were diagnosed as suffering from narcolepsy (Guilleminault and others,1975).
67. Such patients often engage in automatic behavior they later forget.
68. For example, some patients experienced temporary "blackouts".
69. They drove a car satisfactorily for some miles and then found themselves registering at a hotel, forgetting how they got there or why they were there.
70. Some 300,000 persons in the United States suffer from narcolepsy.
71. Emotional excitement may trigger one form of narcolepsy, known as cataplexy, in which the person suddenly collapses because of muscular relaxation and loss of postural control.
72. There may be a hereditary component; for example, dogs have been bred that show the tendency in extreme form, collapsing in the midst of their play (Mitler and Dement,1977).
73. Comparison with normal sleep suggests that in cataplexy the person may pass directly into REM sleep, with its attendant muscular relaxation, without going through the usual sleep stages.
74. In the study referred to above, another 22 percent suffered from apnea, a condition in which the individual cannot breathe while asleep.
75. The person must awaken repeatedly throughout the night in order to survive, because during the short periods of sleep the windpipe is closed off.
76. These disturbances of sleep, and sleep-like interferences of waking states, show the complexity of control systems, both involuntary and voluntary.

La Faim

1. La faim peut devenir un agent de motivation puissant.
2. Les gens qui ont ete forces de vivre dans des conditions de demi-famine rapportent qu'une grande partie de leurs pensees et de leur reves etaient relies a la nourriture et a l'acte de manger.
3. Le corps a besoin d'une provision adequate des matieres nutritives essentielles pour fonctionner avec efficacite.
4. L'absence de ces matieres nutritives pousse les mecanismes homeostatiques a liberer les reserves de nourriture du corps; le foie, par exemple, libere le sucre garde en reserve pour le laisser passer dans le reseau sanguin.
5. Ce type de reapprovisionnement permet a un individu de continuer a fonctionner meme apres avoir passe plusieurs repas.
6. Quand les reserves diminuent jusqu'a un certain niveau, toutefois, les mecanismes homeostatiques automatiques ne sont plus suffisants et l'organisme tout entier est mobilise en vue de la recherche de nourriture.
7. Ouels sont les signaux internes qui previennent le cerveau du niveau insuffisant de la provision corporelle de substances nutritives et de la necessite de trouver de la nourriture?
8. Les sensations que la plupart des gens identifient a la faim-une sensation de vide ou de douleur dans la region gastrique accompagnee parfois d'un sentiment de faiblesse- nous fournissent certains indices.
9. Mais, comme nous le verrons, il existe aussi d'autres signaux physiologiques.
10. Des stimuli externes peuvent influencer la sensation de faim et le comportement d'absorption de nourriture.
11. Apres un bon repas, il se peut que vous desiriez encore le dessert delicieux qu'on place devant vous.
12. Dans un tel cas, l'indice ou le signal de la faim n'est pas interne.
13. L'odeur ou la vue de la nourriture est capable d'engendrer la faim, meme en l'absence de besoin physiologique.
14. Les habitudes et les influences sociales agissent aussi sur le comportement lie a l'absorption de nourriture.
15. Vous etes habitue a manger a des moments fixes dans la journee et il peut vous arriver de ressentir soudainement la faim quand vous constatez qu'il est midi.
16. Il se peut que vous mangiez plus abondamment quand vous partagez un repas avec des amis qui ont tous un appetit vorace que lorsque vous soupez seul.
17. Le comportement a table subit l'influence d'un bon nombre de variables relatives aux facteurs physiologiques, au facteur du milieu et aux facteurs sociaux.
18. Nous allons d'abord etudier les mecanismes physiologiques qui controlent l'absorption de nourriture et nous examinerons ensuite les influences du milieu et les facteurs sociaux quand nous parlerons de certaines des recherches recentes sur l'obesite.

19. La regulation de l'ingestion de nourriture est si essentielle a la survie que la nature nous a fourni plusieurs controles homeostatiques.
20. Meme quand un ou plusieurs signaux sensoriels associes a l'absorption de nourriture se trouvent elimines l'organisme reste capable de controler l'ingestion de nourriture.
21. Les signaux sensoriels sont l'odorat, le gout ou l'information sensorielle provenant de l'estomac.
22. Les divers systemes de controle qui regient l'alimentation sont integres dans une region du cerveau appelee hypothalamus.
23. L'hypothalamus, un petit ensemble de noyaux cellulaires situes a la base du cerveau entretient de nombreuses connexions avec d'autres parties du cerveau et avec l'hypophyse.
24. Il est egalement pourvu d'une plus grande densite de vaisseaux sanguins que toute autre region du cerveau et est, par consequent, facilement influence par l'etat chimique du sang.
25. L'hypothalamus joue un role important dans l'ingestion de nourriture.
26. Les medecins ont remarque que les patients souffrant de tumeurs ou de blessures dans le region de l'hypothalamus mangent excessivement (une maladie appelee hyperphagie) et deviennent obeses.
27. L'invention d'instruments precis servant a l'exploration du cerveau a permis aux chercheurs de delimiter deux regions qui ont une influence sur l'absorption de nourriture.
28. La region laterale de l'hypothalamus (hypothalamus lateral, HL) incite a manger-c'est un centre de "depart" ou d'"ingestion".
29. La region ventro-mediane de l'hypothalamus (hypothalamus ventro-median, HVM) inhibe l'absorption de nourriture-c'est un centre d'"arret" ou de "satiete".
30. Une facon d'etudier la fonction d'une region specifique du cerveau consiste a stimuler le point precis au moyen d'un courant electrique de faible intensite.
31. La stimulation des cellules de l'HL pousse un animal repu a manger.
32. La stimulation des cellules de l'HVM inhibe l'acte de manger; un courant faible ralentit chez l'animal le comportement d'ingestion et un courant plus fort l'arrete totalement (Hoebel et Teitelbaum, 1962).
33. Une autre methode utilisee pour l'etude des fonctions d'une region cerebrale consiste dans la destruction de cellules de cette region et dans l'observation du comportement de l'animal une fois que la region n'exerce plus son controle.
34. Quand des cellules dans l"HL sont detruites, l'animal refuse de manger ou de boire et il mourra si on ne le fait pas manger et boire artificiellement.
35. La destruction de cellules dans l'HVM entraine une ingestion abusive de nourriture et l'obesite chez toutes les especes animales etudiees-du rat et du poulet jusqu'au singe et a l'homme.
36. Ce genre d'etudes montre que la region de l'HVM (centre de satiete) et la region de l'HL (centre d'ingestion)

agissent en directions opposees dans la regulation de l'absorption de nourriture.
37. En outre, deux sortes de systemes de controle semblent etre integres dans l'hypothalamus.
38. L'un, sensible aux besoins nutritifs immediats de l'organisme, dit au cerveau quand debuter et quand arreter un repas.
39. L'autre, un systeme de controle a long terme, maintient une masse corporelle stable durant une certaine periode de temps, peu importe combien l'organisme mange ou ne mange pas au cours d'un repas donne.
40. Les chercheurs ont identifie trois variables qui influencent le controle hypothalamique de l'appetit immediat: le niveau de sucre sanguin, la plenitude gastrique et la temperature du corps.
41. Un bas niveau de sucre ou de glucose dans le sang entraine des sensations de faiblesse et de faim.
42. Les injections d'insuline (qui abaissent le niveau de sucre sanguin) accroissent l'ingestion de nourriture; les injections de glucose (qui elevent le niveau de sucre sanguin) inhibent l'absorption de nourriture.
43. Des recherches ont montre que l'hypothalamus contient des "glucorecepteurs", c'est-a-dire des cellules qui reagissent a la vitesse a laquelle le glucose les traverse.
44. Les glucorecepteurs du HVM et ceux du HL reagissent de facon differente au niveau de glucose.
45. Par exemple, on a insere des micro-electrodes dans l'hypothalamus de chiens et de chats afin d'enregister l'activite nerveuse dans l'HVM et l'HL, avant et apres des injections de glucose ou d'insuline.
46. Suite aux injections de glucose, les cellules de l'HVM (centre de satiete) devinrent plus actives, alors que les cellules de l'HL (centre d'ingestion) diminuerent leur activite.
47. L'inverse s'est produit apres les injections d'insuline.
48. Les cellules qu'on examina dans d'autres regions du cerveau ne manifesterent aucun changement (Anand et coll., 1964, Oomura, 1975).
49. Mais la digestion est un processus lent; nous cessons de manger bien avant que la nourriture consommee soit tranformee et donne assez de sucre sanguin pour combler un deficit.
50. Un signal plus immediat, la plenitude gastrique, informe le cerveau de l'ingestion de la nourriture.
51. Quand on injecte directement de la nourriture dans l'estomac d'un animal affame (sans que cette nourriture passe par la bouche ou par la gorge), ce dernier mange beaucoup moins qu'il ne le ferait autrement.
52. Si on retire de la nourriture de l'estomac d'un animal repu (au moyen d'un tuyau), l'animal mangera encore suffisamment pour compenser la perte.
53. L'experimentation permet de croire que des cellules de l'HVM reagissent a la dilatation de l'estomac pour inhiber l'ingestion additionnelle de nourriture (Deutsch et coll., 1978).

54. Un estomac vide entraine des contractions periodiques des muscles de la paroi stomacale, contractions que nous appelons familierement le "cri des entrailles".
55. Ce mouvement accru de la paroi stomacale active les celluies de l'HL.
56. Un estomac vide donne donc a l'HL le signal de commencer a manger, alors qu'un estomac plein donne a l'HVM le signal de cesser de manger.
57. Un troisieme mecanisme de controle a court terme est celui de la temperature.
58. Dans un environnement chaud, la plupart des animaux et des etres humains mangent moins que dans un milieu froid.
59. Le refroidissement du cerveau exerce un effet similaire sur l'ingestion de nourriture.
60. La nature de ces "thermorecepteurs" n'est pas claire, mais les faits montrent que l'HL reagit a l'abaissement de la temperature cerebrale et l'HVM a la hausse de cette temperature.
61. Ainsi, l'HL reagit quand le niveau de sucre sanguin est bas, quand la mobilite de la paroi gastrique augmente et quand la temperature du cerveau s'abaisse; dans tous ces cas, il declenche l'acte de manger.
62. L'HVM, au contraire, reagit aux niveaux de sucre sanguin eleves, a la dilatation de l'estomac et a la hausse de la temperature cerebrale en interrompant l'acte de manger.
63. Mais tous ces mecanismes a court terme sont subordonnes a un mecanisme a long terme dont l'objectif est de maintenir la masse corporelle a un niveau stable sur une certaine longueur de temps.
64. La plupart des animaux sauvages gardent leur masse corporelle a peu pres au meme niveau pendant toute leur vie d'adulte, meme s'il peut arriver qu'il y ait abondance de nourriture une semaine et penurie l'autre semaine.
65. Les etres humains eprouvent plus de difficulte a conserver une masse constante, car leur comportement d'ingestion est plus fortement influence par les facteurs affectifs et sociaux.
66. Maigre ces influences, toutefois, la plupart des gens gardent approximativement la meme masse d'une annee a l'autre.
67. En plus d'exercer des controles a court terme sur l'ingestion de nourriture, l'hypothalamus semble etre a l'origine d'un systeme tres sensible qui contribue au maintien d'une masse corporelle stable.
68. Nous avons fait remarquer que des rats qui ont des lesions de l'HVM mangent avec exces et deviennent obeses.
69. A l'origine, on attribuait ce comportement a un appetit exagere resultant de la destruction d'une partie du systeme de controle a court terme.
70. Mais une fois qu'il a atteint un certain niveau d'obesite (d'habitude de deux a trois fois sa masse normale), le rat cesse de manger avec exces.
71. Il diminue son taux d'absorption de nourriture jusqu'a un point legerement plus eleve que la normale, a partir duquel il maintient stable sa nouvelle masse d'animal obese.

72. Si son regime est limitatif, le rat va revenir graduellement a sa masse originale.
73. Mais qu'on le laisse manger a volonte a nouveau, il retombera dans ses exces anterieurs et retournera a son etat d'obesite.
74. Il semble donc que les lesions de l'HVM perturbent le systeme de controle a long terme de la masse corporelle, de telle sorte que la masse fait l'object d'une regulation a un niveau superieur.
75. Si on gave des rats obeses de facon a leur faire atteindre un niveau d'obesite encore plus grand, ils reduisent leur taux d'absorption de nourriture jusqu'a ce que leur masse reprenne son niveua d'"obesite normale".
76. Un facteur correlatif quelconque de la masse corporelle doit agir sur l'HVM pour influencer le comportement d'ingestion de nourriture.
77. Les autopsies pratiquees sur les animaux ayant des lesions de l'HVM indiquent qu'il pourrait s'agir de la quantite d'acides gras libres dans le reseau sanguin.
78. Par contre, les rats qui ont des lesions de l'HL refusent toute eau et toute nourriture pendant un certain temps apres l'operation et ils finiront par mourir a moins qu'on ne les nourrisse artificiellement.
79. Par ailleurs, la plupart finissent par se remettre a boire et a manger de leur propre chef, mais ils se stabilisent a un nouveau niveau inferieur de masse corporelle.
80. Ils sont comme les animaux ayant des lesions de l'HVM se stabilisent a un nouveau niveau d'obesite (Mitchel et Keesy, 1974).
81. La encore, ce comportement denote l'alteration d'un systeme de controle a long terme de la masse plutot qu'une simple diminution d'appetit.
82. Les rats qu'on a affames (en reduisant leur masse a 80% de l'etat normal) avant de pratiquer les lesions de l'HL ne refusent pas de manger apres l'operation.
83. Au contraire, plusieurs mangent excessivement, mais seulement jusqu'a ce que leur masse atteigne un nouveau niveau.
84. Ce niveau est inferieur a celui de leur masse normale, mais superieur au niveau de 80% que representait la masse dans leur etat de privation avant l'operation.
85. Ces resultats indiquent que l'HVM et l'HL ont des effets reciproques sur le "point fixe" de la masse corporelle.
86. Une atteinte a l'HVM eleve ce point fixe.

LES REVES

1. Les activites conscientes peuvent se derouler dans des contextes differents des conditions normales d'eveil.
2. On a decrit ces conditions comme des etats alteres de conscience.
3. Ils se distinguent des situations de division de la conscience par le fait que ce sont des etats generaux constituant un contexte pour la modification de la conscience.
4. Par exemple, un individu enivre par l'alcool peut reagir de facon tres differente dans une situation sociale, compare a quand il est sobre.
5. C'est pourquoi l'etat d'ebriete peut etre concu comme un etat a l'interieur duquel on peut etudier les activites conscientes.
6. L'on peut decouvrir, par exemple, comment le jugement est affecte, comment les emotions sont suscitees et ainsi de suite.
7. Dans cette section consacree au sommeil et au reve et dans les suivantes qui portent sur la meditation, les drogues et l'hypnose, le probleme des etats alteres de conscience est central.
8. L'influence que le contexte altere exerce sur les processus conscients qui se deroulent au sein de celui-ci est d'une importance speciale.
9. Le changement d'etat qui nous est le plus familier est le passage de l'eveil au sommeil et vice versa.
10. Si le sommeil etait un etat totalement inconscient, il ne serait pas considere comme un etat altere de conscience.
11. Mais le sommeil, comme l'ebriete, est un contexte dans lequel un genre de pensee different apparait, particulierement tel qu'il se reflete dans le reve.
12. Biologiquement, le sommeil est en partie un etat de recuperation des forces.
13. Cependant le processus est plus complexe encore, car quelle que soit la condition du corps, l'individu a le choix entre dormir et rester eveille.
14. Le sommeil n'est pas entierement inconscient, puisqu'en se reveillant on peut se souvenir de ses reves.
15. Il n'est pas tout a fait inactif, car certaines personnes marchent durant leur sommeil.
16. Il n'est pas non plus completement insensible, puisqu'une maman peut se reveiller des que son bebe commence a pleurer.
17. Il n'est pas absolument depourvu d'intentionnalite, car certains individus sont capables de decider de s'eveiller a un moment precis et ils le font.
18. Et pourtant, le sommeil est le changement le plus evident dans l'etat conscient; la plupart d'entre nous faisons l'experience de transitions entre les deux etats (eveil et sommeil) au moins deux fois par jour.
19. Trois aspects du sommeil illustrent certains des problemes associes a la comprehension de cet etat.
20. Ces aspects sont les horaires de sommeil (les intervalles types entre periodes de sommeil et d'eveil), la profondeur du sommeil et les controles volontaires et involontaires qui affectent le sommeil.
21. Le nouveau-ne passe frequemment du sommeil a l'eveil.
22. A la longue, le rythme jour-nuit s'installe.

23. Le temps total de sommeil tombe de 16 a 13 h par jour, au cours des six premeirs mois de la vie.
24. Les adultes disent dormir en moyenne des nuits de 7h et demi, mais il y a de grandes variations; certains s'en tirent tres bien avec aussi peu que 3h et demi par nuit (Jones et Oswald,1968).
25. On a rapporte le cas d'une vieille dame qui n'aurait dormi que 45 min par nuit (Meddis, Pearson et Langford, 1973).
26. Et puis, il y a les "poules" qui se couchent tot et se levent tot et les "hibous" qui se couchent tard et se levent tard (Webb,1975).
27. Les humains partagent avec les autres mammiferes un rythme naturel des processus biologiques.
28. Cette horloge biologique, appelee rythme circadien, se rapproche etroitement de la periodicite jour-nuit du monde dans lequel nous vivons.
29. Laisse a lui-meme, le cycle de l'etre humain aurait tendance a suivre un rythme naturel de 25h, mais les evenements exterieurs viennent modifier ce rythme pour en faire une periode de 24h (Aschoff, 1965).
30. A cause de leurs rythmes circadiens, certains voyageurs trouvent l'adaptation aux nouveaux cycles temporels, que le deplacement par avion peut produire en quelques heures, plutot difficile.
31. Le "decalage horaire" peut durer plusieurs jours.
32. Une etude de precision de la coordination musculaire a montre que des etudiants americains qui etaient passes des Etats-Unis en Allemagne par avion ont mis 12 jours a se remettre du voyage vers l'Allemagne.
33. Ces memes etudiants ont mis 10 jours a se remettre du voyage de retour.
34. Apparemment, il est plus facile de revenir a un cycle precedent que d'en adopter un nouveau.
35. Des experiences du meme genre indiquent que le decalage horaire est plutot attribuable au derangement du rythme normal qu'a la perte de sommeil (Webb, Agnew et Williams, 1971).
36. Il est facile de reveiller certains individus, alors que c'est plus difficile pour d'autres qui ont le sommeil profond.
37. Des recherches commencees au cours des annees 30 (Loomis, Harvey et Hobart, 1937) ont mene a l'elaboration de techniques raffinees pour mesurer la profondeur du sommeil.
38. Aussi des techniques ont ete elaborees pour determiner quand les reves se produisent (Dement et Kleitman, 1957).
39. Nous savons maintenant que le sommeil comprend cinq stades-quatre dependent de la profondeur du sommeil et un cinquieme est associe aux mouvements oculaires rapides (REM*), au cours duquel les reves se produisent habituellement.
40. Quand une personne eveillee ferme les veux et se detend, les ondes du cerveau dessinent un trace caracteristique et regulier de 8 a 13 vibrations (Hz) a la seconde (connues sous le nom d'ondes alpha).
41. Pendant que l'individu sombre dans le sommeil du stade 1, les ondes cerebrales perdent un peu de leur regularite et de leur amplitude et presentent peu ou pas de frequences alpha.

42. Le stade 2 est caracterise par l'apparition de fuseaux-breves emissions d'ondes rythmees de 13 a 16 Hz, un peu plus hautres que l'alpha-et par des hausses et des chutes occasionnelles de l'amplitude de l'EEG.
43. Les stades 3 et 4, qui correspondent a un sommeil encore plus profond, sont caracterises par des ondes lentes (appeles ondes delta).
44. Il s'avere de plus en plus difficile de reveiller le dormeur durant ces stades.
45. (Pourtant, un stimulus d'ordre personnel, tel le nom d'une personne qui lui est familiere, fait souvent sortir l'individu d'un sommeil profond, alors qu'un stimulus impersonnel, comme un bruit intense, ne le ferait pas.)
46. Apres environ une heure de sommeil, un autre changement survient.
47. Le trace de l'EEG revient au stade 1, mais le sujet ne s'eveille pas.
48. Ce sont plutot des mouvements oculaires qui apparaissent sur le protocole d'enregistrement.
49. Ce stade porte le nom de REM; les autres stades sont des stades non-REM (ou N-REM).
50. Quand on l'eveille a partir du stade REM, le sujet rapporte habituellement qu'il a reve.
51. Meme si le sommeil est apparemmemt leger a ce stade, alors que la personne est en train de rever, il est aussi difficile de l'eveiller qu'au stade 2.
52. Les stades varient tout au long de la nuit et il y a de grandes differences individuelles.
53. Neanmoins, de facon generale, on passe par les quatre premiers stades au cours de la premiere heure de sommeil, et le stade REM apparait ensuite.
54. Les stades de sommeil profond (3 et 4) ont tendance a disparaitre durant la seconde moitie de la nuit, alors que le REM prend de plus en plus d'importance.
55. Ceux qui souffrent d'insomnie eprouvent beaucoup de difficulte a s'endormir ou a rester endormis toute la nuit.
56. Un enquete utilisant un vaste echantillon d'adultes a montre que 6% des hommes et 14% des femmes disent souffir d'insomnie "assez souvent" ou "souvent" (Kripke et Simons, 1976).
57. Toutefois, ceux qui se disent insomniaques pouraient avoir une fausse conception du temps qu'ils passent a dormir, parce qu'ils se souviendraient seulement des periodes d'eveil et non des periodes de sommeil.
58. Une etude faite pour verifier les plaintes de pretendus "insomniaques" a revele que seulement la moitie d'entre eux etaient vraiment eveilles au moins 30 min. par nuit (Carskadon, Mitler et Dement, 1974).
59. D'habitude, nous exercons un controle considerable sur la decision de dormir ou de rester eveille.
60. La plupart des collegiens peuvent se laisser aller au sommeil n'importe quand dans la journee, pourvu que les conditions s'y pretent et qu'ils desirent le faire, et ce, qu'ils en aient l'habitude ou non.
61. Une etude a montre que 60% d'un groupe de 430 etudiants faisaient des sommes durant la journee - certaines a tous les jours, d'autres occasionnellement.
62. Les autres 40% ont dit qu'il ne leur arrivait jamais de dormir le jour (Evans et coll., 1977).

63. Parmi ceux a qui il arrivait de sommeiller le jour, 22% le faisaient parce qu"ils y prenaient plaisir et donc pour d'autres raisons que le besin de sommeil.
64. Les 78% qui restent ne faisaient des sommes que lorsqu'ils manquaient de sommeil - soit qu'ils aient veille tard la nuit precedente ou qu'ils aient accumule des pertes de sommeil durant plusieurs jours.
65. Ils avaient besoin de recuperer le sommeil perdu.
66. Certains troubles du sommeil sont plus graves que les simples plaintes, plus familieres d'insomnie.
67. C'est le cas de la narcolepsie et de l'apnee, pour n'en nommer que deux.
68. La narcolepsie est une tendance incontrolable a tomber endormi, que la victime soit assise a son bureau, en train de conduire sa voiture ou en plein conversation.
69. Il est parfaitement normal qu'un etudiant s'endorme pendant un cours, mais si c'est le professeur qui tombe endormi en donnant son cours, nous sommes presence d narcolepsie.
70. Dans une enquete, sur 190 patients qui se plaignaient de ne pouvoir rester eveilles le jour, 65% seulement se sont vus attribuer un diagnostic de narcolepsie (Guilleminault et coll., 1975).
71. Ces malades ont souvent des comportements automatiques qu'ils oublient plus tard, par exemple des "manques de memoires temporaires".
72. Ils peuvent conduire leur automobile de facon normale pendant des kilometres, pour ensuite se retrouver inscrits dans un hotel, sans savoir comment ils se sont rendus la et pourquoi.
73. Aux Etats-Unis, on denombre 300,000 personnes qui souffiraient de narcolepsie.
74. L'excitation affective peut declencher une forme de narcolepsie, appelee catalepsie, dans laquelle la personne s'effondre soudainement suite a une detente musculaire et a la perte du controle posturale.
75. Il peut y avoir la un element hereditaire; par exemple, on a produit des lignees de chiens qui manifestent cette tendance sous des formes extremes, s'effondrant en pleine activite de jeu (Mitler et Dement, 1977).
76. La comparaison avec le sommeil normal laisse supposer que la personne cataleptique passerait peut-etre directement de l'eveil au sommeil REM, avec la detente musculaire qui l'accompagne.
77. Ceci sans passer par les stades de sommeil N-REM habituels.
78. Dans le groupe de 190 patients mentionnes plus haut, 22% souffraient d'apnee, un etat dans lequel l'individu ne peut respirer quand il dort.
79. Il doit se reveiller a maintes reprises pendant toute la nuit afin de survivre, car pendant ses courtes periodes de sommeil, la trachee se ferme.
80. Ces perturbations du sommeil et ces intrusions du sommeil dans les etats d'eveil font voir toute la complexite des systemes de controle, tant volontaires qu'involontaires.

Please circle the corresponding letter of the best answer for each question.

1. Narcolepsy is defined as the inability to

   a. sleep.
   b. dream while sleeping.
   c. breathe while sleeping.
   d. control sleep.

2. Under natural conditions, the human cycle follows a period of

   a. 24 hours.
   b. 25 hours.
   c. 26 hours.
   d. 23 hours.

3. A person flies from Alberta to Australia and stays for one week before returning to Alberta. Which of the following statements best describes his periods of adjustment?

   a. He will adjust to Australia time more quickly than he will adjust to Alberta time.
   b. He will adjust to Alberta time more quickly than he will adjust to Australia time.
   c. He will suffer jet lag in Alberta but not in Australia.
   d. He will adjust to Alberta time in approximately in one week.

4. A person suffering from cataplexy may

   a. have temporary blackouts.
   b. have no dreams.
   c. sleep in stages one to four.
   d. have only REM sleep.

5. The four stages of NREM sleep are defined according to

   a. subjective ratings of depth of sleep.
   b. the amount of dreaming per stage.
   c. their duration.
   d. their EEG patterns.

6. An infant who dies suddenly while sleeping most likely suffered from

   a. apnea
   b. narcolepsy
   c. cataplexy
   d. insomnia

7. It is most difficult to arouse a person in which stage of sleep?

   a. REM
   b. 1
   c. 2
   d. 3

8. A person suffering from apnea must awaken repeatedly throughout the night because

   a. the windpipe becomes closed off.
   b. slight noises disturb him.
   c. he cannot control his desire to sleep.
   d. his brain produces no delta waves.

9. A person suffering from insomnia has difficulty

   a. waking up.
   b. going to sleep.
   c. remembering things.
   d. dreaming.

For each statement, circle T if it is True or F if it is False.

1. Sleep is not entirely unconscious or planless but it is insensitive. T F

2. The circadian rhythm is not established in an infant until it's sixth month of life. T F

3. A person who is daydreaming is producing alpha waves. T F

4. Stage 2 sleep is characterized by the appearance of spindles. T F

5. Ease of arousal from sleep varies according to the individual. T F

6. EEG's are used to measure brain waves in all but the REM stage of sleep. T F

7. Dreams occur more frequently in the second half of the night. T F

8. While there is a general pattern of going through the first 4 stages during the initial hour of sleep, great individual differences occur in how the patterns vary during subsequent hours of sleep. T F

9. REM sleep could be named "paradoxical" sleep because the EEG waves are the same as in stage 1 sleep, but the person is harder to wake up. T F

10. During REM sleep, there is a decrease in muscle tone of the body muscles. T F

11. The experimenter awakens a subject who tells the experimenter an elaborate, detailed dream. The subject was most likely in REM sleep. T F

12. Insomniacs have an accurate perception of how little they sleep because they remember the times when they were awake. T F

13. Deciding when to sleep and when to stay awake is essentially an involuntary act for most people. T F

14. People who suffer from cataplexy move to the REM stage of sleep more quickly than do normal sleepers. T F

15. Narcolepsy is not genetically controlled but develops in response to slight injuries to the brain. T F

Please circle the corresponding letter of the best answer for each question.

1. Overeating is called
   a. obesity.
   b. hyperphagia.
   c. anorexia.
   d. homeostasis.

2. Stimulation of the LH cells causes
   a. a satiated animal to eat.
   b. a thirsty animal to drink and eat.
   c. an obese animal to become thirsty.
   d. a feeding animal to feel full.

3. In examining centers of the hypothalmus that regulate food intake, researchers have found that
   a. the LH inhibits eating.
   b. the VMH iniates eating.
   c. both short-term and long-term systems are involved.
   d. all of the above.

4. Although a person has just eaten a large meal and does not feel hungry, he eats dessert with a group of friends. This behavior demonstrates which influence on eating behavior?
   a. environmental
   b. social
   c. physiological
   d. cultural

5. A person who is satiated feels
   a. full.
   b. empty.
   c. thirsty.
   d. hungry.

6. Humans have more trouble than animals in maintaining a regular weight throughout their lifetime because
   a. human diets are less natural and confuse the control mechanisms.
   b. with evolution, the LH and VMH centers have become less well developed.
   c. human eating is more strongly influenced by social and emotional factors.
   d. by wearing clothes, humans distort the tenperature mechanisms for controlling heat.

7. When body stores are diminished to a certain point
   a. the entire organism becomes mobilized to seek food.
   b. glucose levels rise.
   c. stomach muscles expand.
   d. the hypothalmus contracts.

8. Damage to the VMH results in
   a. no change in body set point.
   b. lowering of body set point.
   c. raising of the body set point.
   d. the absence of body set point.

9. A person has not eaten for 24 hours but does not yet feel hungry. The most likely reason for this is that
   a. the homeostatic mechanisms are inadequate.
   b. it is not mealtime.
   c. the person's stomach is distended.
   d. the person's liver is releasing glucose into the bloodstream.

For each statement, circle T if it is True or F if it is False.

1. In this passage, eating behavior is explained through a number of physiological, social, and environmental variables. T F
2. The odour or sight of food arouses a physiological need for food. T F
3. Nature has provided us with one main homeostatic control to regulate food intake. T F
4. The hypothalmus has the same density of blood vessels as other regions of the brain. T F
5. Depletion of essential nutrients activates homeostatic mechanisms to release food stored in the body. T F
6. Stimulation of the LH with an electric current produces a response similar to that which would occur following natural stimulation. T F
7. Three variables influencing hypothalmic control of immediate appetite are blood-sugar level, stomach fullness, and body weight. T F
8. Glucoreceptors initiate activity in the LH (feeding center) but have little or no effect on the VMH (satiety center). T F
9. Distention of the stomach causes the LH (feeding center) to become activated. T F
10. Temperature acts as a long term control mechanism. T F
11. If a person is accidentally locked in a cold room where food is stored, he will likely, despite seeing the food, forget about his hunger because of decreased brain temperature. T F
12. Most people who are obese have suffered damage to the VMH center. T F
13. Some correlate of body weight, such as the amount of free fatty acids in the bloodstream, must act upon the VMH to influence food intake. T F
14. Rats with lesions in the LH refuse to eat or drink. T F
15. Rats with LH lesions eventually resume eating and drinking on their own even though they must be force fed to keep them from dying to begin with. T F

S'il vous plaît encercler la lettre correspondante à la meilleure réponse

1. La narcolepsie est définie comme l'incapacité de

   a. dormir.
   b. rêver quand on dort.
   c. respirer quand on dort.
   d. contrôler la durée de sommeil.

2. Dans des conditions naturelles le cycle humain suit une période de

   a. 24 heures.
   b. 25 heures.
   c. 26 heures.
   d. 23 heures.

3. Un individu voyage en avion de l'Alberta à l'Australie où il reste une semaine avant de revenir en Alberta. Laquelle de ces déclarations décrit le mieux son ajustement?

   a. Il va s'ajuster à l'heure d'Australie plus rapidement qu'il va s'ajuster à l'heure de l'Alberta.
   b. Il va s'ajuster à l'heure de l'Alberta plus rapidement qu'il va s'ajuster à l'heure de l'Australie.
   c. Il va être victime du décalage horaire en Alberta mais pas en Australie.
   d. Il va s'ajuster à l'heure de l'Alberta dans approximativement une semaine.

4. Un individu souffrant de catalepsie peut

   a. souffrir d'effondrement temporaire.
   b. ne pas avoir de rêves.
   c. dormir par stade, de un à quarte.
   d. seulement avoir un sommeil REM.

5. Les quatres stades de sommeil NREM sont definis selon

   a. les taux subjectifs de la profondeur de sommeil.
   b. le montant de temps passé à rêver par stade.
   c. leur durée.
   d. leur tracé de l'EEG.

6. Un enfant qui meurt soudainement dans son sommeil peut avoir été atteint de

   a. l'apnée.
   b. la narcolepsie.
   c. la catalepsie.
   d. l'insomnie.

7. Dans quel stade de sommeil est-il plus difficile d'éveiller un individu?

   a. REM
   b. 1
   c. 2
   d. 3

8. Un individu souffrant d'apnée doit rapidement se réveiller pendant la nuit parce que

   a. la trachée se ferme.
   b. les petits bruits le dérangent.
   c. il ne peut pas contrôler son désir de sommeiller.
   d. son cerveau ne produit pas les ondes delta.

9. Un individu souffrant d'insomnie trouve difficile de

   a. se réveiller.
   b. s'endormir.
   c. se rappeller de choses.
   d. rêver.

Pour chaque phrase, encercler V si elle est vraie ou F si elle est fausse.

1. Le sommeil n'est pas entièrement inconscient ni dépourvu d'intentionnalité mais il est insensible. V F

2. Le rythme circadien n'est pas établi chez l'enfant avant le sixième mois de la vie. V F

3. Un individu qui rêvasse produit des ondes alphas. V F

4. Le stade 2 du sommeil est caractérisé par l'apparition de fuseaux. V F

5. La facilité de sortir quelqu'un du repos varie selon chaque individu. V F

6. L'EEG est utilisé pour mesurer les ondes cérébrales dans tous les stades du sommeil à l'exception du stade REM. V F

7. Les rêves se produisent plus fréquemment dans la seconde moité de la nuit. V F

8. Même si d'une facon générale, on passe par les quatre premiers stades au cours de la première heure du sommeil. il existe de grandes différences individuelles quant à la régularité de ces stades durant les heures subséquentes de la nuit. V F

9. Le sommeil REM peut être nommé le sommeil "paradoxique" car les ondes EEG sont les mêmes qu'en stade 1 du sommeil, mais l'individu en sommeil REM est plus difficile à reveiller. V F

10. Durant le sommeil REM, il se produit un décroissement du tonus musculaire dans les muscles du corps. V F

11. Une chercheur éveille un sujet qui raconte en details un rêve élaboré . Le sujet était probablement dans le stade de sommeil REM. V F

12. Les insomniaques ont une perception exacte de la petite quantité de repos qu'ils ont pris car ils se souviennent des fois qu'ils étaient éveillé. V F

13. La décision de se coucher ou de rester debout est essentiellement un acte involontaire pour la majorité des gens. V F

14. Les gens qui souffrent de la catalepsie passe au stade REM du sommeil plus rapidement que les dormeurs normaux. V F

15. La narcolepsie n'est pas contrôlé génétiquement mais elle se développe comme réponse à de légères blessures au cerveau. V F

S'il vous plâit encercler la lettre correspondante à la meilleure réponse

1. Manger excessivement est appelé

   a. l'obésité.
   b. l'hyperphagie.
   c. l'anorexie.
   d. l'homéostatique.

2. La stimulation des cellules HL amène

   a. un animal repu à manger.
   b. un animal assoiffé à boire et à manger.
   c. un animal obèse à avoir soif.
   d. un animal en train de manger a se sentir repu.

3. En examinant les centres dans la glande hypothalamus qui régularisent le comportement d'ingestion de nourriture, les chercheurs ont trouvé que

   a. le HL gêne l'acte de manger.
   b. le HVM initie l'acte de manger.
   c. les systèmes à court terme et à long terme sont impliqués.
   d. toutes ces réponses sont bonnes.

4. Même si une personne a pris un copieux repas et n'a plus faim, elle mange un dessert avec un groupe d'amis. Ce comportement est un exemple d'une influence de quelle variable?

   a. de l'environment
   b. sociale
   c. physiologique
   d. culturelle

5. Une personne repue se sent

   a. remplie.
   b. vide.
   c. assoiffée.
   d. affammée.

6. Les êtres humains éprouvent plus de difficultés à conserver une masse constante tout au long de leur vie parce que

   a. la diète des humains est moin naturelle donc confond les mécanismes de contrôle.
   b. avec l'évolution, les centres HL et HVM sont devenus moins bien développés.
   c. le comportement d'ingestion est plus fortement influencé par les facteurs affectifs et sociaux.
   d. en portant des vêtements, les humains déforment les mécanismes de température qui contrôlent la chaleur.

7. Quand les réserves diminuent jusqu'à un certain niveau

   a. l'organisme tout entier est mobilisé en vue de la recherche de nourriture.
   b. les niveaux de glucose augmentent.
   c. les muscles de l'estomac se gonflent.
   d. l'hypothalamus se contracte.

8. L'endommagement au niveau de l'HVM produit

   a. aucun changement dans le point fixé de la masse corporelle.
   b. diminue le point fixé de la masse corporelle.
   c. élève le point fixé de la masse corporelle.
   d. cause l'absence du point fixé du corps.

9. Une personne n'a pas mangé depuis 24 heures et ne se sent pas affamée. La raison la plus probable de ceci est que

   a. les mécanismes homéostatiques sont inadéquats.
   b. ce n'est pas l'heure du repas.
   c. l'estomac de la personne est distendu.
   d. le foie de la personne est à libérer le sucre dans le réseau sanguin.

Pour chaque phrase, encercler V si elle est vraie ou F si elle est fausse.

1. Dans cette section, le comportement relié à l'action de manger s'explique par un nombre de variables physiologiques, sociales, et par des facteurs de l'environment. V F

2. L'odeur ou la vue de la nourriture stimule un besoin physiologique pour la nourriture. V F

3. La nature nous a doté d'un contrôle homéostatique de base pour régler la quantité de nourriture que l'on consomme. V F

4. L'hypothalamus a la même densité de vaisseaux sanguins que toute autre région du cerveau. V F

5. L'absence des matières nutritives active les mécanismes homéostatiques qui font libérer les réserves de nourriture accumulé dans le corps. V F

6. La stimulation de l'HL avec un courant électrique produit une réponse semblable à celle qui aurait lieu suite à une stimulation naturelle. V F

7. Trois variables qui influencent le contrôle hypothalamique de l'appetit immédiat sont le niveau de sucre sanguin, la plénitude gastrique et la pesanteur du corps. V F

8. Les glucorécepteurs initient l'activité dans l'HL (centre d'ingestion) mais ils ont peu où pas d'effet sur l'HVM (centre de satiété). V F

9. La détention gastrique provoque l'activation de l'HL (centre d'ingestion). V F

10. La température réagit comme un mécanisme de contrôle à long terme. V F

11. Si un individu est accidentellement embarré dans une chambre froide où de la nourriture est conservée, il va probablement oublier sa faim (malgré la vue de la nourriture) à cause d'une baisse de la température au niveau du cerveau. V F

12. La majorité des gens qui sont obèses ont subi un endommagement du centre de l'HVM. V F

13. Certains facteurs corrélatifs de la masse corporelle, par exemple la quantité d'acides gras libres dans le réseau sanguin, doivent agir sur l'HVM pour influencer le comportement d'ingestion de nourriture. V F

14. Les rats qui ont des lésions de l'HL refusent toute eau et toute nourriture. V F

15. Les rats qui ont des lésions de l'HL finissent par se remettre à boire et à manger d'eux-mêmes malgré qu'au commencement ils doivent être nourris de force pour les garder en vie. V F

QUESTIONNAIRE: Demographics

Age:_____ Sex_____ Year of study_____

Check the ones that apply to you.
Franco-Albertan_____
Anglo-Albertan_____
Quebecker_____
Other_____
Rural background_____
City background_____

Write in language.
Father's language_____
Mother's language_____

1. a) How do you perceive yourself to be in oral English and French.
b) How do you perceive yourself to be in reading/writing English and French.

Answer in short note form .
2. What advantages and disadvantages do you see in knowing both French and English ?

_____

_____

3. Do you consider yourself a perfectly bilingual person?
Yes_____ No_____

What would you have to do to attain this goal, if desirable?

_____

_____

4. At this time in your life what do you experience as most stressful ?_____

5. In your family are there disagreements concerning language, which one to use and when ?
Yes_____ No_____ Sometimes_____

6. How is studying in French for you. Circle one to indicate amount of stress experienced.

Very	moderately	somewhat	not at all
1	2	3	4

7. Is there anything you wish to add . Use other side if necessary.

_____

Volunteer's Consent Form:

I_____, agree to take part in the above study with the understanding that all the information I give to the researcher will remain confidential and that no identifying data will accompany the personal information used in any published material. I agree to take part in this study with the understanding that my anonymity will be respected.

Researcher's Declaration:

I, Jeannine de Moissac, declare that all information given to me by the aforementioned volunteer will be held in the strictest confidence, that no identifying data will accompany the personal information given to me by the said volunteer, and that the tapes of our conversations will be erased at the end of this study. I further declare that if the information given to me by the said volunteer is to be used for any other purpose than this study, permission will be sought from him/her. If permission is not granted, the information will not be used.

_____